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THE

VETERINARY BULLETIN

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DISEASES CAUSED BY BACTERIA AND FUNGI

PISU, I. (1951). La prova biologica nella rana per la identificazione della enterotossina stafilococcica. [**A frog test for staphylococcal enterotoxin.**]—*Boll. Ist. sieroter., Milano.* **30,** 622-636. [Abst. from English summary.] 3251

Rana esculenta and *Hyla arborea* were used instead of *R. pipiens* for testing staphylococcal enterotoxin. Both *R. esculenta* and *H. arborea* proved specifically sensitive to the enterotoxin, but the reaction given by *H. arborea* was more characteristic and similar to that given by *R. pipiens*, and is more marked than that given by *R. esculenta*. *H. arborea* is more suitable.

RICHOU, R., GERBEAUX, C. & SCHLAEPFER, J. (1949). De l'influence des suspensions de *Bacillus abortus* sur l'accroissement de l'immunité engendrée par l'anatoxine staphylococcique. [**The influence of suspensions of *Brucella abortus* on immunity produced by staphylococcal anatoxin.**]—*C. R. Acad. Sci., Paris.* 229, 858-860. 3252

Of two groups of rabbits, one received three successive injections of increasing amounts of staphylococcal anatoxin; for similar injections in the other group the anatoxin was mixed with a suspension of formalin and heat killed *Br. abortus* organisms. The addition of *Br. abortus* suspension markedly increased the amount of staphylococcal antitoxin produced in the blood, as compared with the group in which anatoxin alone had been used.

The practical implications of these findings, as well as the feasibility of other types of "combined vaccination", were briefly discussed.

—G. P. MARSHALL.

ANON. (1950). **Estimate of progress in mastitis control in 412 herds using reduction of percentages of *Streptococcus agalactiae* infection and abnormal secretions as indices of progress.** —*Rep. N. Y. State vet. Coll.* 1948-1949 pp. 97-119. [Abst. from summary.] 3253

Assays of milk after infusion with penicillin in various vehicles showed rather high levels as late as 72 hours.

Various treatments for acute and chronic mastitis and for infected quarters not showing mastitis were described and an attempt made to evaluate them on small groups of cows in various parts of the state. Penicillin in various vehicles was effective except against coliform organisms and pseudomonas.

Ointment tubes as a method of infusing penicillin, streptomycin or aureomycin offer promise and should be investigated further.

Unsupervised treatment by laymen has apparently favoured the development of acute and chronic mastitis due to *Ps. pyocyanea* and this infection has been disseminated through herds by use of infected saline or syringes. Pseudomonas infection results in a form of mastitis that is difficult or impossible to cure, even by allowing the udder to have a long period of rest from lactation

Trials with aureomycin were too limited to permit any comment.

SENZE, A. (1951). Iperyt azotowy i jego lecznicze działanie przy zapaleniu wymion u krów. [**Nitrogen mustard in the treatment of bovine mastitis.**]—*Med. weteryn.* 7, 25-26. 3254

S. recorded the successful treatment of four cases of bovine mastitis with nitrogen mustard [nitrogen analogue of dichlorodiethyl sulphide] in doses of 0·01 mg. per kg. body weight administered intravenously. [Causal agent not stated.]—J. R. MITCHELL.

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

MURPHY, R. (1948). **The control of mastitis in a commercial dairy herd.**—*Irish Vet. J.* **2**, 216-218. 3255

A clinical note on penicillin. The herd was well managed, but had a high incidence of streptococcal mastitis. Over a period of three years only about 10% of the cows were uninfected at some time or other. Both penicillin and propamidine failed to cure *Corynebacterium pyogenes* infections of the udder.

—JOHN SCARNELL.

BAKER, G. P. & PILKINGTON, T. (1952). **Benemid in the treatment of streptococcal endocarditis.**—*Lancet.* **263**, 17-18. [Authors' summary slightly modified.] 3256

A case of *Str. faecalis* endocarditis in man did not respond to large and long-continued dosage with penicillin, streptomycin, aureomycin and chloramphenicol. Complete cure appears to have resulted from the very high blood-penicillin levels achieved with the aid of benemid.

NORDBERG, B. K. (1951). **Studies of *Bacillus anthracis* in regard to its properties of diagnostic and pathogenetic importance.**—*Nord. Vet.-Med.* **3**, 703-704. [In English.] 3257

B. anthracis is non-motile and develops capsules in horse serum in 4–6 hours. *B. cereus* and *B. mycoides* are motile and do not vegetate in horse serum in 48 hours. The capsule of *B. anthracis* contains a tissue damaging principle.

—CLIVE BRIGGS.

PIWOWARCZYK, S. (1951). Próba aglutynacyjna w diagnostyce gruźlicy drobiu. **[Agglutination test in the diagnosis of TB. in fowls.]**—*Polsk. Arch. Weteryn.* **1**, 101-112. [English and Russian summaries. Abst. from English summary.] 3258

The author carried out agglutination tests on 5,770 fowls including 150 known to be affected with TB. It is stated that the agglutination test gives results consistent with those obtained using the tuberculin test, but that infection can be revealed earlier by the former test.

POUND, A. W. (1952). **Observations on the agglutination and haemolysis of red cells treated with extracts of *Mycobacterium tuberculosis*: an evaluation of methods.**—*J. Path. Bact.* **64**, 131-143. [Author's summary slightly modified.] 3259

An aqueous extract prepared from phenol-extracted *M. tuberculosis*, strain P.N., has been shown to contain three components that can be adsorbed to the surface of sheep erythrocytes. Cells sensitised with two of these components (fractions 1–2 and fraction 4) which appear to be predominantly polysaccharides with different chemical and serological properties, are agglutinated by antibody appearing in the serum of persons infected with the tubercle bacillus. On addition of complement to the sensitised red-cell-antibody system, such cells are haemolysed, and this phenomenon gives the most satisfactory basis for titration of antibody to these fractions. Both these components (fractions 1–2 and fraction 4) give non-specific haemolysis-by-complement titres with a significant number of sera from healthy Mantoux-negative individuals.

The third component (fraction 5) modifies sheep erythrocytes so that they are agglutinated by all human sera. The component in serum agglutinating such sensitised red cells does not appear to be an antibody.

HEIN, W. (1952). Das Verhalten des Sabin-Feldman-Testes und der Westphal'schen Komplementbindungs-Reaktion bei der Lungentuberkulose. **[The Sabin-Feldman test in toxoplasmosis and the Westphal complement-fixation reaction in pulmonary TB.]**—*Z. Tropenmed. u. Parasit.* **3**, 339-357. [Abst. from English summary.] 3260

Fifty-nine out of 102 tuberculous patients gave a positive reaction to the toxoplasmosis test (the Sabin-Feldman dye test) as well as to the Westphal complement-fixation test. Fourteen more patients had ambiguous titres. These figures are far above the average infection rate of the German population found by Piekarski, Shalhammer and Westphal. They lend support to those who question the specificity of toxoplasmosis tests.

Similar factors which turn Wassermann and related reactions positive in cases of malaria, scarlet fever and virus pneumonia, may also play a part in toxoplasmosis tests. On the other hand, the high percentage of positive reactions among tuberculous patients may actually indicate that TB. favours the coexistence of toxoplasmosis or *vice versa*.

BIRKHÄUSER, H. (1950). Die Resistenz der Meerschweinchen-Niere gegen Tuberkulose. **[Resistance to TB. of the kidney in g. pigs.]**—*Schweiz. Z. allg. Path.* **13**, 455-463. [English, French and Italian summaries. Abst. from English summary.] 3261

The author confirmed the observation of previous authors concerning the resistance of the kidney of the g. pig to the development of a progressive tuberculous lesion. In g. pigs killed 61 to 157 days after intrarenal inocula-

tion of 1 μg. of a virulent human strain of *M. tuberculosis* only minimal specific lesions were found, which had a tendency to fibrotic scarring.

GEKS, F. J. (1950). Uber den Einfluss des Serums mit TB1 behandelter Patienten auf die Tuberkelbakterienvermehrung. II. **[The bacteriostatic action of the serum of tuberculous persons on tubercle bacilli after the administration of acetylaminobenzaldehyde-thiosemicarbazone.]**—*Z. Hyg. InfektKr.* **131,** 345-354. 3262

After administration to tuberculous human beings of 0·4–0·5 g. daily of acetylaminobenzaldehyde-thiosemicarbazone, their blood serum caused bacteriostasis. Tables were given to indicate the duration of this tuberculostatic action after different doses of the drug. During the phase of temporary inhibition tubercle bacilli render part of the drug ineffective and are thus able to multiply.—W. R. BETT.

ACKART, W. B. & MURRAY, T. J. (1951). **A medium for the rapid cultivation of** *Mycobacterium avium.*—*J. Bact.* **62,** 75-79. [Authors' summary modified.] 3263

A modification of the Dubos medium was developed that yielded excellent growth of avian type *Mycobacterium tuberculosis* after three days' incubation at 37°C. The important factor was the inclusion of succinic acid as a source of carbon.

Using the above medium, a three-day turbidimetric assay of chemotherapeutic substances is possible.

POPP, L. & EGELHAAF, H. (1949). Über Peteosthor und seine Komponenten. I. Über die Wirkung von Thorium X auf Tuberkelbakterien in vitro. **["Peteosthor" and its components. I. Effect of thorium X on tubercle bacilli** *in vitro.***]**—*Zbl. Bakt. I.* (*Orig.*) **154,** 49-56. [English, French and Russian summaries. Abst. from English summary.] 3264

Thorium X destroys tubercle bacilli *in vitro.* In animal experiments tubercle bacilli damaged by thorium X are no longer infective. —W. R. BETT.

DALLING, T. (1948). **Tuberculin and tuberculin testing.**—*Vet. Rec.* **60,** 527-536. 3265

A review of tuberculin testing in cattle. —W. R. KERR.

BUCKLEY, J. J., BUCKLEY, S. M. & KEEVE, M. L. (1951). **Tissue culture studies on liver cells of tuberculin sensitized animals in the presence of tuberculin (purified protein derivative).**—*Johns Hopk. Hosp. Bull.* **89,** 303-308. [Authors' conclusions modified.] 3266

In the tuberculin type of hypersensitivity, not only the cells derived from mesoderm, but also hepatic epithelial cells are more sensitive to the protein of the tubercle bacillus than are normal cells. Hepatic epithelial cells from a rabbit sensitized to tubercle bacilli showed lack of growth, cellular injury and necrosis upon exposure *in vitro* to tuberculin. Specific humoral (circulating) antibodies are not necessary for the allergic reaction. The question of whether or not complement plays a rôle in this phenomenon is being examined.

MYRVIK, Q. & WEISER, R. S. (1952). **The tuberculin reaction v. the antigenicity of chloroform soluble tuberculoprotein wax.**—*J. Immunol.* **68,** 413-419. [Authors' summary copied *verbatim.*] 3267

Chloroform soluble tuberculoprotein wax in mineral oil is capable of inducing strong and typical tuberculin sensitivity in guinea pigs as judged by cutaneous, systemic and corneal reactions to Old Tuberculin.

The "defatting" of tubercle bacilli markedly reduces their capacity to produce tuberculin sensitivity but enhances their capacity to produce anaphylactic sensitivity to tuberculoprotein.

FENNER, F. & LEACH, R. H. (1952). **Studies of** *Mycobacterium ulcerans.* **I. Serological relationship to other mycobacteria.**—*Aust. J. exp. Biol. med. Sci.* **30,** 1-10. [Authors' summary modified.] 3268

Immune sera were prepared in rabbits against three strains of *M. ulcerans,* against human, bovine and murine types of mammalian tubercle bacilli, and against avian type *M. tuberculosis, M. ranae* and *M. phlei.* By means of complement-fixation tests with absorbed and unabsorbed sera, using heat-killed washed bacilli as the antigens, the cross relationships between these mycobacteria were studied.

M. ulcerans is antigenically distinct from all the other species examined, although complement-fixation tests with heat-killed bacteria suggest that it is more closely related to the mammalian types of tubercle bacilli than to other mycobacteria.

FENNER, F. (1952). **Studies on** *Mycobacterium ulcerans.* **II. Cross-reactivity in guinea-pigs sensitized with** *Mycobacterium ulcerans* **and other mycobacteria.**—*Aust. J. exp. Biol. med. Sci.* **30,** 11-20. [Author's summary modified.] 3269

The skin reactivity of g. pigs sensitized

with heat-killed mycobacteria of six different species was studied. Animals sensitized with *M. ulcerans* showed strong reactivity to suspensions of the homologous organism and some cross-reactivity with other mycobacteria, especially mammalian type tubercle bacilli. They also reacted strongly to the inoculation of mammalian but not avian P.P.D. tuberculin.

Animals sensitized with mammalian type tubercle bacilli (BCG) reacted to *M. ulcerans*, but to a lesser degree than the reverse relationships.

FELDMAN, W. H., KARLSON, A. G. & GRINDLAY, J. H. (1951). **Lepromin : Mitsuda's reaction with experimental observations in dogs.**—*Ann. N. Y. Acad. Sci.* **54.** Art. 1. 53-72. 3270

Few reports are available on lepromin testing of dogs. The authors' objective was to determine if the reaction to lepromin in dogs born and raised in a leprosy-free area is comparable to the reaction in dogs raised in an area where leprosy is prevalent, as observed by J. N. Rodriguez (1938) and H. W. Wade (1941). Of 16 dogs given a single injection or two simultaneous injections of lepromin, six reacted positively. Of nine dogs given a second injection, five were positive, although only three had been positive previously. Each of six dogs given repeated injections reacted positively. The capacity of dogs to develop a hypersensitivity to lepromin varies greatly in different individuals. Initial injection often provokes enhanced reactivity that may accelerate the reaction to subsequent injections of the antigen. Lepromin injected repeatedly induces a state of hypersensitivity that enhances the reaction potential. Whether or not dogs react positively to an intracutaneous injection of lepromin does not depend on previous environmental contact with *Mycobacterium leprae*.—W. R. BETT.

PEARSON, J. K. L. (1951). **Further experiments in the use of penicillin in the prevention of *C. pyogenes* infection of the non-lactating bovine udder.**—*Vet. Rec.* **63,** 215-220. 3271

A preliminary trial on cows that had produced calves established that 100,000 I.U. of procaine penicillin or calcium penicillin in 1 ml. oily base persisted longer in the dry udder than other combinations tested. In each animal two quarters of the udder were treated, the other two being inoculated with bland oil only, to act as controls. Inoculations commenced in June and were repeated in some cows a second and in some a third time at intervals of 18–21 days until August or calving. In 1,062 control quarters 29 cases of corynebacterial mastitis were encountered: but in the same number of treated quarters only two cases occurred. Both the latter followed a misunderstanding; they were recorded, but were atypical from the point of view of the experiment. It is suggested that penicillin persists in the udder for about ten days but protects for about 20 days, and that the method described above is a useful prophylactic against summer mastitis.—JOHN SEAMER.

KUZDAS, C. D., MORSE, E. V. & ELLIS, R. H. (1951). **A systematic study of the pathogenicity of sixty-two strains of Corynebacterium renale for laboratory white mice.**—*J. Bact.* **62,** 763-766. [Abst. from authors' summary.] 3272

Sixty-two strains of *Corynebacterium renale* (50 from cases of bovine pyelonephritis and 12 from apparently healthy cattle) were tested for their pathogenicity for laboratory white mice following intravenous inoculation. Thirty-seven strains produced a pyelonephritis which appeared to be identical with the macroscopic lesions that are characteristic of bovine pyelonephritis. Thirty-four of the 50 strains which were obtained from field cases of bovine pyelonephritis produced the infection in mice, while only three of the 12 strains isolated from apparently healthy cattle were virulent. The authors commented on classification of diphtheroid bacteria.

DAVIE, J. & WELLS, C. W. (1952). **Equine melioidosis in Malaya.**—*Brit. vet. J.* **108,** 161-167. [Authors' summary slightly modified.] 3273

The authors described three fatal cases of melioidosis in race-horses in Malaya. They constitute, so far as is known, the only three equine cases recorded subsequent to the first case, also reported from Malaya, in 1925. The condition, in these three cases, was undiagnosed during life. Treatment was symptomatic.

RICE, C. E., BYRNE, J. L., CONNELL, R., MOYNIHAN, L. W. & FRANK, J. F. (1952). **Studies of swine erysipelas. III. Antigenic characteristics of strains of *Erysipelothrix rhusiopathiae* isolated in different areas in Canada.**—*Canad. J. comp. Med.* **16,** 195-204. [Authors' summary copied *verbatim*.] 3274

The antigenicity of strains of *E. rhusiopathiae* isolated in different areas in Canada has been determined by immunization of rabbits and by testing these antisera for agglutinative activity with suspensions of homologous and heterologous suspensions.

The rabbit antisera were produced with killed suspensions of 31 strains isolated in West-

ern, Central and Eastern Canada from cases of arthritis, septicemia, and diamond skin disease in swine and from acute infections in two turkeys and a goose. All strains induced antibody titres of 1:1600 or 1:3200.

Antigens were prepared from 134 strains and tested for agglutination by 8 to 31 of these rabbit antisera; the majority, 92, with 10 to 20 antisera. Suspensions of 19 strains were very actively agglutinative with all antisera; conversely, 14 strains appeared to be poor antigens throughout. Different preparations of the same strain varied in antigenic titre.

No evidence was obtained by these serological methods of qualitative differences in the 134 strains of *E. rhusiopathiae* which would permit their differentiation into groups. Such differences as were observed between them, appeared to be quantitative rather than qualitative in nature.

Gray, M. L., Millerick, T. I. & Johnston, R. L. (1952). **Listeriosis in goats of Michigan.**—*M.S.C. Vet.* **12,** 157-159. [Authors' summary modified.] 3275

Erysipelothrix (*Listeria*) *monocytogenes* was isolated from the medulla of one of three goats which died following symptoms of a nervous disorder.

Watt, J. A. A. (1952). **The isolation and cultural characteristics of an organism of the *Haemophilus* group in calf pneumonia.**—*J. comp. Path.* **62,** 102-107. [Author's summary modified.] 3276

The isolation, growth characteristics and biochemical reactions of an organism of the *Haemophilus* group, isolated from calves affected with pneumonia, was described. The induction of pneumonia in a calf by nasal instillation of the organism in combination with a filtrable agent from pneumonic calf lung after serial passage in mice was discussed. It was suggested that the evidence pointed to the presence of a virus aetiology in some outbreaks of calf pneumonia.

Jacob, F., Simonovitch, L. & Wollmann, E. (1951.) Induction de la production d'une colicine par le rayonnement ultraviolet. **[Production of a colicine by *Bact. coli* after ultraviolet irradiation.]**—*C. R. Acad. Sci., Paris.* **233,** 1500-1502. [Abst. from authors' summary.] 3277

Exponential growth of *Bact. coli* ML in a synthetic medium did not give rise to a colicine [one of the antibiotics derived from the Enterobacteriaceae]. After ultra-violet irradiation growth continued for 70·m·n·. A colicine was synthesized which was liberated by bacterial lysis.—C.M.S.

Sears, H. J. & Brownlee, I. (1952). **Further observations on the persistence of individual strains of *Escherichia coli* in the intestinal tract of man.**—*J. Bact.* **63,** 47-57. [Abst. from authors' summary.] 3278

Continuing their work [*Ibid.* (1949) **59,** 293] the authors presented further evidence that the normal human individual harbours two kinds of strains of *Bact. coli,* residents and transients, the former comprised typically of one or two strains at any one time and the latter often absent and rarely consisting of more than three or four strains. It was further demonstrated that this pattern of bowel *Bact. coli* may be present in very young babies as well as adults, resident strains becoming well established as early as 10 days after birth. Babies as intimately associated as twins are likely to harbor the same residents and also to share the transient strains.

The conditions under which resident strains are lost and new ones acquired could not be accurately defined, but evidence was adduced that a complete change of environment is often, but not always, accompanied by such changes. Diarrhoeic attacks of short duration and artificial purges do not by themselves usually bring about changes in resident strains.

Marthedal, H. E. (1952). Studier over pullorum-disease. Serologiske og kulturelle forhold samt antigen-undersøgelser. **[Studies on pullorum disease. Serology, culture and antigenic structure.]**—*Nord. Vet.-Med.* **4,** 201-224. [In Danish. English and German summaries. Abst. from English summary.] 3279

Serological tests carried out on 36 hens (26 pullorum-infected and 10 non-infected) with four antigens (two *S. typhi* and one each *S. gallinarum* and *S. pullorum*) showed that in hens with latent pullorum infection antibody formation was slight (1:20–1:100) or absent prior to the laying period, rose to 1:1,600 after laying had been in progress for some time and showed no tendency to fall when the hens stopped laying. Of 13 reactors found, 12 came from the originally infected stock, while the remaining one had acquired the disease after 4–5 months' contact with infected animals. 1·9% of reactors' eggs examined were yolk-infected and 3 shell-infected with *S. pullorum.*

122 strains of *S. pullorum* and *S. gallinarum,* isolated both from field cases and from the above-mentioned experimental animals,

were examined by slide agglutination, and 26 by tube agglutination, and all showed the same antigenic structure in respect of absorbed sera (IX, XII_2 and XII_3).—G. P. MARSHALL.

LUKE, D., GORDON, W. A. M. & GRACEY, J. F. (1952). **Observations on the epidemiology and control of fowl typhoid in Northern Ireland during 1948-1950.**—*Res. Exp. Rec. Min. Agric. N. Ireland* 1951. pp. 60-65. [Authors' summary modified.] 3280

The history of fowl typhoid in Northern Ireland was outlined briefly. The main methods of poultry farming were described in so far as they may influence the spread of the disease. The behaviour of the disease within an endemic area was described. The carrier status of the brown rat (*Rattus norvegicus*) was established. Vaccination with a dead autogenous vaccine under field conditions gives a resistance to fowl typhoid lasting 6–8 weeks. Early diagnosis, vaccination of in-contacts and the subsequent testing with pullorum antigen and removal of reactors are regarded as important factors in control of the disease.

SMITH, H. W. (1952). **The evaluation of culture media for the isolation of salmonellae from faeces.**—*J. Hyg., Camb.* **50,** 21-36. 3281

S. investigated the relative sensitivity of various culture media for the isolation of salmonella from different human, animal and bird faeces artificially inoculated with infected tissue fluids. Selenite and tetrathionate media used together gave the best results; when used separately selenite was preferable to tetrathionate. For *S. cholerae-suis* and *S. abortus-ovis* direct plating was superior to the use of enrichment media.—CLIVE BRIGGS.

ATKINSON, N., WOODROOFE, G. M. & CULVER, D. E. (1952). **The occurrence of Salmonella types in Australia.**—*Aust. J. exp. Biol. med. Sci.* **30,** 73-80. [Authors' summary modified.] 3282

A group of 750 Australian strains of *Salmonella* has been typed. Thirty different types were found, of which by far the most prevalent were *S. typhi-murium* and *S. bovis-morbificans*. Many of the types occurred in both human and animal disease.

MCCULLOUGH, N. B. & EISELE, C. W. (1951). **Experimental human salmonellosis. I. Pathogenicity of strains of *Salmonella meleagridis* and *Salmonella anatum* from spray-dried whole egg.**—*J. infect. Dis.* **88,** 278-289. 3283

Human volunteers were fed strains of *S. meleagridis* and *S. anatum* isolated originally from spray dried eggs. All strains used proved pathogenic, but great variation in infectivity was observed. Clinical illness varied from mild diarrhoea to severe prostrating gastro-enteritis. The carrier state persisted in some individuals for several months.—D. LUKE.

MCCULLOUGH, N. B. & EISELE, C. W. (1951). **Experimental human salmonellosis. II. Immunity studies following experimental illness with *Salmonella meleagridis* and *Salmonella anatum*.** — *J. Immunol.* **66,** 595-608. [Authors' summary slightly modified.] 3284

Immunity after experimental human infections due to *S. meleagridis* and *S. anatum* was studied by challenging the subjects at various intervals and dose levels. Some increased resistance was found in all 13 subjects studied although the degree varied considerably.

On the first refeeding using somewhat larger doses of the same strains, 16 of the 23 subjects did not become ill. Of 17 subjects re-fed a second time using considerably larger doses, seven again did not become ill. The great majority of illnesses produced by first or second refeeding were milder than the initial illnesses. An increased resistance was present in some instances as long as nine months after the initial attack.

Seven men who developed prolonged carrier states in the initial experiments, with one exception, ceased excreting the organism promptly in the refeeding experiments.

I. & II. MCCULLOUGH, N. B. & EISELE, C. W. (1951). **Experimental human salmonellosis. III. Pathogenicity of strains of *Salmonella newport*, *Salmonella derby*, and *Salmonella bareilly* obtained from spray-dried whole egg. IV. Pathogenicity of strains of *Salmonella pullorum* obtained from spray-dried whole egg.**—*J. infect. Dis.* **89,** 209-213 & 259-265. 3285

I. Salmonella infection was produced experimentally in human beings by feeding strains of *S. newport, S. derby* and *S. bareilly* isolated from spray-dried eggs to volunteers. *S. bareilly* and *S. newport* produced illness in one subject at the lowest dosage used, 125,000 and 152,000 organisms respectively. The incubation period was only 4–5 hours in two cases and as long as seven days in another.

II. Doses of *S. pullorum* ranging from 1,300 million to 10,000 million organisms produced illness in man. Three strains from spray-dried eggs and one from a human case were fed. With doses less than were required to pro-

duce symptoms it was not possible to isolate the organism from the faeces at any time.
—E. G. WHITE.

POLLACK, A. D., KELLY, E. H., GORELICK, A. N., BRAUN, W. & VICTOR, J. (1952). **Superinfection in experimental brucellosis of guinea pigs.**—*J. infect. Dis.* **90,** 267-272. [Authors' summary and conclusions modified.] 3286

Br. suis PSIII k and a streptomycin resistant strain of *Br. abortus,* 6232c sr3, both virulent organisms, differed in their pathological effects in g. pigs. G. pigs infected with *Br. abortus* were inoculated with *Br. suis* at various intervals up to six months following the original infection. When present, superinfection could be detected by the morphological changes in the host and by the cultural characteristics of the organisms recovered.

G. pigs with *Br. abortus* infection of two weeks' duration were susceptible to infection with *Br. suis.* However, only one-half of them yielded *Br. suis* when cultured. Thereafter, *Br. abortus*-infected g. pigs were largely refractory to *Br. suis* infection. During the first 17 weeks of infection, *Br. abortus* was recovered from all animals resistant to *Br. suis* superinfection, while at 31 weeks *Br. abortus* was recovered from only 20% of resistant animals. Whether or not superinfection occurred following inoculation of *Br. suis* into *Br. abortus*-infected animals, serum agglutinins for brucella increased above the level found in control *Br. abortus* infections.

KELLY, E. H. & GORELICK, A. N. (1952). **Therapy of experimental brucellosis.** — *J. infect. Dis.* **90,** 249-257. [Authors' summary modified.] 3287

The combined use of streptomycin, sulphadiazine, and aureomycin proved the most efficacious of several treatments in g. pigs infected with *Br. suis.*

Difficulties in the way of applying results in g. pigs to human infection were discussed.

The embryonated hen's egg and the white mouse, under the conditions used, proved to be unsatisfactory hosts for experimental therapeutic studies.

AVEZZI, G. (1951). Sul fenomeno paradosso nell'agglutinazione delle brucelle. [**The paradoxical phenomenon in *Brucella* agglutination.**]—*Boll. Ist. sieroter., Milano.* **30,** 247-258. [Abst. from English summary.] 3288

A discussion of the views of other workers on the nature of the paradoxical phenomenon in brucella agglutination reactions, together with the author's own views.

RENOUX, G. & VERDAGUER, S. (1951). Le sérodiagnostic de la brucellose au moyen d'un antigène "alcool". [**Use of alcohol in preparing suspensions for the agglutination test in brucellosis.**]—*C. R. Soc. Biol., Paris.* **145,** 1494-1496. 3289

A stable antigen was prepared with ethyl alcohol (50% for a stock suspension). In tests on human cases this proved more sensitive than conventional antigens.—G. P. MARSHALL.

KERNKAMP, H. C. H. & ROEPKE, M. H. (1948). **Vaccination of pigs with *Brucella abortus* vaccine Strain 19.**—*J. Amer. vet. med. Ass.* **113,** 564-567. 3290

In a herd where brucellosis existed a group of pigs was given *Brucella abortus* Strain 19 vaccine and a second group left unvaccinated. Infection was probably introduced to both groups from older breeding stock and there was no clear cut difference in the abortion rates, the vaccine probably not having produced resistance against porcine brucellosis. It is unfortunate that the status of the pigs regarding infection at the time of vaccination is unknown.
—K. G. TOWERS.

HERRLING, H. (1952). Ein Beitrag zur Frage der Leptospirose bei Grosstieren unter besonderer Berücksichtigung eines Falles der Schweinsberger Krankheit der Pferde. [*Leptospira* **infection and Schweinsberg disease.**]—*Mh. VetMed.* **7,** 110-112. 3291

A review of the literature, followed by the description of a case of Schweinsberg disease in a horse in which the blood was positive for leptospira infection, although at very low titres. Blood samples were taken from other horses in the clinic, and some were also positive.—ROY MACK.

YORK, C. J. (1952). **A complement-fixation test for leptospirosis in cattle.**—*Amer. J. vet. Res.* **13,** 117-120. [Author's summary copied *verbatim.*] 3292

A complement-fixation test for the serological diagnosis of bovine leptospirosis is described. Since serums from uninoculated and noninfected cattle failed to fix complement, while serums from animals that had recovered from experimental and natural infection did, the test is considered reliable. Specificity is indicated by lack of cross reactions with serums from cattle that had recovered from brucellosis, vibriosis, virus diarrhea, and winter dysentery. Accuracy compares favorably with the agglutination-lysis test, but, since the complement-fixation test is objective and more easily performed, it should prove useful in diagnosis.

KIRSCHNER, L., MILLER, T. F. & GARLICK, C. H. (1952). **Swineherd's disease in New Zealand. Infection with *Leptospira pomona* in man, calves and pigs.**—*N. Z. Med. J.* **51**, 98-108. [Abst. from authors' summary.] **3293**

The authors reported *L. pomona* infection in 12 human beings in New Zealand. They consider that the main carriers are pigs; 5% of pigs examined at Dunedin abattoir were found to be infected. Infection occurs in calves.

Leptospira survived for a long time in tap water containing a fraction of milk; this indicates the danger of persistent infection on dairy farms, particularly in those areas where the rainfall is heavy. At present the best way to avoid the spread of the infection on dairy farms is to segregate pigs from cattle.

GOCHENOUR, W. S., JR., JOHNSTON, R. V., YAGER, R. H. & GOCHENOUR, W. S. (1952). **Porcine leptospirosis.**—*Amer. J. vet. Res.* **13**, 158-160. [Authors' summary modified.] **3294**

An explosive outbreak of disease in swine was reported. In addition to the virus of swine fever and *Salmonella cholerae-suis*, *Leptospira pomona* was recovered from an affected animal.

Serological evidence indicated widespread subclinical infection among the remaining swine and other domestic animals maintained on this farm.

FORBES, B. R. V. & LAWRENCE, J. J. (1952). **A serological survey of dogs in Australia for leptospiral infection.**—*Aust. vet. J.* **28**, 72-75. [Authors' summary modified.] **3295**

A serological survey of 275 canine sera, 257 from apparently healthy dogs, 18 from animals suspected of leptospiral infection, was described.

The authors assumed a titre of agglutination-lysis of 1:100 to be indicative of past or present leptospiral infection. In terms of this criterion, they found no evidence of infection with *L. canicola*, *L. australis A*, *L. australis B* or *L. mitis*. Two sera had agglutinins of significant titre against an antigen of *L. icterohaemorrhagiae;* one of these came from an apparently healthy dog, the other from a dog suspected of leptospirosis. Two sera had anti-*pomona* agglutinins of a titre which indicated past or present infection with *L. pomona*.

FREUDIGER, U. (1952). Beitrag zur pathologischen Anatomie und Serologie der Leptospirosen des Hundes. (Gibt es im makroskopischen und mikroskopischen Bild der Organveränderungen Unterschiede zwischen den serologisch negativen und positiven, aber nicht an akuter Leptospirose erkrankten Hunden?) [**Pathological anatomy and serology of *Leptospira* infection in dogs.**] —*Schweiz. Arch. Tierheilk.* **94**, 47-59 & 102-120. [English, French and Italian summaries.] **3296**

Fifty-three dogs from the city and suburbs of Berne which had been killed on account of chronic illness or old age, or had been sent in for pathological diagnosis were examined serologically for leptospirosis; 17 were positive in titres of 1:100. In addition 17 dogs with acute leptospirosis and some other dogs were examined. In young animals the infection was acute as a rule and mostly caused by *L. canicola;* in older dogs infection was mostly latent and caused by *L. icterohaemorrhagiae*. It was not possible to detect gross anatomical or histological changes distinguishing serologically positive from serologically negative cases. Interstitial focal nephritis was equally frequent in both groups. No lesions were found which would enable latent, chronic or past leptospirosis to be diagnosed. Combination of a chronic lesion of the kidneys with symptoms of acute nephritis, does not prove a relapse of leptospirosis.—W. STECK.

DONATIEN, A. & GAYOT, G. (1951). Essai d'immunisation du chien contre la leptospirose à *Leptospira ictero-haemorragiae*. [**Attempts to immunize dogs against *Leptospira icterohaemorrhagiae*.**]—*Arch. Inst. Pasteur, Algér.* **29**, 280-286. **3297**

A vaccine composed of formolized liver and spleen of g. pigs killed at the height of the reaction to *L. icterohaemorrhagiae* failed to protect other g. pigs which were challenged with virulent infected material. A formolized culture vaccine prepared from 6–24 day growth in Stuart's medium protected g. pigs and dogs against experimental inoculation of infected g. pig tissues. The experiments with dogs were somewhat confused by the presence of distemper and rickettsial infection and by the use in one of the two experiments of a mixed *L. canicola* and *L. icterohaemorrhagiae* vaccine. Vaccinated animals and controls were challenged with liver and spleen emulsion of g. pigs infected with *L. icterohaemorrhagiae*. The authors concluded that formalin does not destroy the antigenic property of *L. icterohaemorrhagiae* in culture but does so with infected tissue emulsions.—E. G. WHITE.

YAGER, R. H. & GOCHENOUR, W. S., JR. (1952). **Leptospirosis in North America.**—*Amer. J.*

trop. Med. **1,** 457-461. [Authors' summary copied *verbatim.*] 3298

Leptospirosis in North America may be caused by any of at least seven antigenically distinct strains of leptospirae. Of these, *L. icterohemorrhagiae, L. canicola, L. pomona* and *L. bataviae* are known to exist in the United States. Methods for serological and bacteriological diagnosis of leptospirosis have been discussed. The need for more adequate diagnostic laboratory services, improved diagnostic procedures, a definitive therapy and epidemiological surveys has been set forth.

Collier, W. A. (1948). Die Verbreitung der Leptospiren in Niederländisch-Indien. **[The distribution of leptospira in the Dutch East Indies.]**—*Acta Trop.* **5,** 135-159. [In German; English and French summaries. Abst. from English summary.] 3299

Twenty-four *Leptospira* species were serologically typed by means of the agglutination-lysis test. C. stated that true sub-species could be distinguished by the saturation method of Ruys and Schüffner. *L. autumnalis, L. bataviae* and *L. icterohaemorrhagiae* were each divided into two sub-species by this method.

Verge, J. & Poggioli, C. (1951). Un foyer de botulisme équin dans l'Oise. **[An outbreak of equine botulism.]**—*Bull. Acad. vét., Fr.* **24,** 509-517. 3300

An account of an outbreak of botulism which affected all 11 horses on a farm. All except four died or were slaughtered *in extremis*. The clinical picture was one of progressive weakness without fever or disturbance to the circulation or respiration. Diagnosis was confirmed after the finding of a dead cat in a lucerne store and the isolation from it of the causal organism. The last four horses were saved by injections of specific antiserum which was supplied by the Pasteur Institute (*Cl. botulinum,* type D).—J. Edwards.

Knock, G. G. (1952). **Survey of soils for spores of *Clostridium botulinum* (Union of South Africa and South West Africa).**—*J. Sci. Food Agric.* **3,** 86-91. 3301

Of 102 samples of soil from both regions, only three yielded *Cl. botulinum* Type B toxin when cultured. This was the first isolation of *Cl. botulinum* Type B from the soil in South Africa and, unlike results obtained in the U.S.A., came from uncultivated soils. It was suggested that a hundred to a thousand viable, heat-resistant spores are necessary to produce a toxic culture. With the risk of human botulism in Africa, it is recommended that there should be no relaxation in thermal processing standards for foods.—Malcolm Woodbine.

Kiser, J. S., de Mello, G. C., Reichard, D. H. & Williams, J. H. (1952). **Chemotherapy of experimental clostridial infections.**—*J. infect. Dis.* **90,** 76-80. [Abst. from authors' summary.] 3302

Ten species of clostridia proved to be sensitive to aureomycin, terramycin and penicillin *in vitro* in low concentrations. In comparison with these antibiotics 125–1,000 times as much chloramphenicol was required for bacteriostasis. *In vivo* tests indicated that the first two antibiotics were effective in preventing death from experimental infections with any of the seven species of clostridia tested. Penicillin was less satisfactory in infections with *Cl. bifermentans, Cl. novyi,* and *Cl. histolyticum.*

Hutchison, H. E. (1952). **Laryngeal histoplasmosis simulating carcinoma.**—*J. Path. Bact.* **64,** 309-319. 3303

A diagnosis of carcinoma of the vocal cords had been made in a man after examination of biopsy material. The patient was referred to hospital for operation. Before operation the sections were examined by H. who had studied cases of epizootic lymphangitis in mules in Italy during his war service. He was struck by the resemblance to the appearances he had seen in sections from mules. The diagnosis of carcinoma was discarded and a diagnosis of histoplasmosis was made. Further biopsy specimens were obtained and the presence of *Histoplasma capsulatum* in the lesions was confirmed. H. commented on the very close resemblance in histological specimens between the lesions caused by *H. capsulatum* and those caused by *H. farciminosum*. This resemblance had previously been recorded by Bullen [*V.B.* 20, 61].

The patient had lived for many years in India and had visited other countries in the Far East. The source of infection was not known. He made a good recovery which was attributed to the natural defences of the body rather than to any specific treatment. There is an excellent photomicrograph of a smear from an ulcer of a mule showing *H. farciminosum* in macrophages.—M.C.

La Touche, C. J. (1951). **An unsealed hanging-drop technique for the investigation of *Microsporum* in hair.**—*Brit. J. Derm. Syph.* **63,** 8-15. [Abst. from abst. in *Rev. med. vet. Mycol.* **1,** 467-468. (1951.)] 3304

A description of a simple hanging-drop

method for speedy distinction between *Microsporum audouini* and *M. canis* on pieces of infected hair from patients with tinea capitis.

The occurrence of a large number of macroconidia at an early stage in the development of *M. canis* is generally accepted as the chief criterion for its separation from *M. audouini*, another one being the production of a yellow pigment, which is, however, sometimes absent. Some of the cultures of *M. audouini* kept for varying periods after six days gave rise to a remarkable number of pectinate branches, while others produced an abundance of vesicular chlamydospores.

The material used to test this technique included hairs from 30 persons with tinea capitis in the West Riding of Yorkshire. In nine cases the causal organism was *M. audouini*, in 13 *M. canis* while the dysgenic forms associated with the remainder are believed to be degenerate strains of *Microsporum*, which form a high proportion of the cultures obtained from local cases.

Garrod, L. P. (1952). **The sensitivity of *Actinomyces israeli* to antibiotics.**—*Brit. med. J.* June 14th, 1263-1264. [Author's summary modified.] 3305

The mean minimum inhibitory concentrations (g. per ml.) of five antibiotics for 12 strains of *A. israeli* isolated from human beings were: penicillin 0·06, streptomycin 23·7, aureomycin 4·2, chloramphenicol 2·8, and terramycin 2·2.

Slack, J. M., Ludwig, E. H., Bird, H. H. & Canby, C. M. (1951). **Studies with microaerophilic actinomycetes. I. The agglutination reaction.**—*J. Bact.* 61, 721-735. [Abst. from authors' summary.] 3306

Microaerophilic actinomycetes were obtained from human, bovine, porcine, and equine cases of actinomycosis as well as from human tonsils of individuals without actinomycosis. Six of these micro-organisms isolated from human infections were adapted to growth in a non-antigenic peptone dialyzate thioglycolate medium. Pairs of rabbits were immunized with merthiolated antigens prepared from these six cultures, and high titre agglutinating antisera were obtained.

In agglutination tests with homologous and heterologous antigens of microaerophilic actinomycetes, these micro-organisms were found to be serologically related. There were positive low titre reactions in most instances in agglutination tests made with antigens prepared from species of *Nocardia* and *Streptomyces*. *Streptomyces griseus* was not agglutinated by any of the antisera. These results may indicate the presence of common group antigens. They do not indicate that the prolonged immunization broadened the antibody spectrum of the antiserum.

Agglutination tests were also made with antigens prepared from species of *Corynebacterium* and *Lactobacillus* with positive agglutination only in very low titre.

Priestley, F. W. (1952). **Freeze-drying of the organism of contagious bovine pleuro-pneumonia.** — *J. comp. Path.* 62, 125-135. [Author's summary modified.] 3307

Viability tests on serum broth cultures of the organism indicate that generally it survives for about 50 days when stored at 37°C. and for about 150 days when stored in the ice-chest.

A technique for drying the organism *in vacuo* over phosphorus pentoxide was described in detail. It was shown that dried organisms remain viable for at least three years in the ice-chest and for at least 475 days in the incubator at 37°C. Evidence was brought to show that the drying of attenuated cultures results in a sharp increase of virulence. Conversely, as might be expected, dried virulent strains retain their virulence.

Experiments with dried vaccine led to the conclusion that this is not yet a practical proposition.

Priestley, F. W. (1952). **Observations on immunity to contagious bovine pleuro-pneumonia, with special reference to the bactericidal action of blood.**—*Brit. vet. J.* 108, 153-161. [Author's summary slightly modified.] 3308

The blood of animals that have recovered from bovine contagious pleuro-pneumonia is highly bactericidal for the causal organism. The blood of animals dying of pleuro-pneumonia is not bactericidal and, in general, neither is blood from normal animals. Bactericidal action is dependent upon the presence of antibody and complement. There is evidence to show that the lack of bactericidal action in the blood of dying animals is due to deficiency of complement and not to any deficiency of antibody.

Attempts to explain the deficiency of complement were inconclusive but suggest that there is circulating in the blood stream of dying animals some antigen-antibody complex which fixes complement and removes it from the bactericidal system.

Hale, J. H. (1951). **Studies on staphylococcus mutation: a naturally occurring "G" goni-**

dial variant and its carbon dioxide requirements. — *Brit. J. exp. Path.* 32, 307-313. 3309

The role of CO_2 in the metabolism of a small colony variant of staphylococcus isolated in pure culture from pus was studied. There was normal large-colony typical growth of the organism in the presence of 10% CO_2, but without CO_2 there was a diminished capacity to effect the dismutation of pyruvic acid and decarboxylation of oxalacetate. This power was not restored by addition of coenzymes or accessory factors. H. advanced a possible explanation based on enzyme adaptation. He further suggested that conditions in the body gave the variant a survival value over the parent strain, and that the use of antibiotics may give rise to selective conditions for a wide range of small colony variants.—K. J. SINCLAIR.

SEELEY, H. W. (1951). **The physiology and nutrition of *Streptococcus uberis*.**—*J. Bact.* 62, 107-115. [Authors' summary modified.] 3310

The physiological reactions and nutritional requirements of a collection of strains of *Str. uberis* were studied, and the results reported. The relationship of *Str. uberis* to the recognised species and groups of streptococci was discussed.

LWOFF, A. (1952). **Lysogenic bacteria, I.**—*Endeavour.* 11, 72-77. 3311

A general article illustrating the use of single-cell culture technique in the study of lysogenic bacteria.—CLIVE BRIGGS.

LEIFSON, E. (1951). **Staining, shape, and arrangement of bacterial flagella.**—*J. Bact.* 62, 377-389. [Author's summary modified.] 3312

A method of staining bacterial flagella was described. The function of each stain ingredient was discussed, and detailed directions were given for the preparation of the bacteria and the smears. On the basis of flagellar shape and arrangement, bacteria were classified into several groups, these being illustrated by photographs.

See also abstr. **3527** (resistance of *Br. suis* in chilled and pickled pork); **3548-3549** (bovine sterility); **3567** (report, Canada); **3570** (report, Union of South Africa); **3571** (report, Southern Rhodesia); **3573** (report, Jamaica); **3574** (report, British Honduras); **3576** (report, Indonesia).

DISEASES CAUSED BY PROTOZOAN PARASITES

CARMICHAEL, J. (1952). **The epizootiology of African trypanosomiasis.**—*Rep. XIVth Int. vet. Congr.* 2, 21-24. [French and German summaries. Author's summary copied *verbatim*.] 3313

Of the species of *Glossina*, the so-called bush or savannah type of tsetse are the most important from the point of view of trypanosomiasis in animals, as they transmit *T. congolense*, *T. vivax* and *T. brucei*, the three most pathogenic trypanosomes.

The presence of tsetse is a basic factor in the epizootiology of African trypanosomiasis and the wild mammals supply food for the fly and act as a reservoir of infection. As a means of control, however, the destruction of game is impracticable except in isolated areas. The movement of fly is an important factor in the spread of trypanosomiasis. The species of trypanosome is epizootiologically important and *T. congolense* is the most pathogenic.

Mechanical transmission by biting flies other than tsetse is the means of much spread and is responsible for most of the disease beyond the periphery of the fly areas.

T. evansi infection is entirely a mechanically transmitted trypanosomiasis of camels in the Sudan. Good husbandry in these cases is a factor in disease resistance.

DESOWITZ, R. S. & WATSON, H. J. C. (1951). **Studies on *Trypanosoma vivax*. I. Susceptibility of white rats to infection.**—*Ann. trop. Med. Parasit.* 45, 207-219. [Authors' summary copied *verbatim*.] 3314

Experiments are described of which the primary object was to establish a pathogenic strain of *Trypanosoma vivax* in laboratory-bred white rats. While this aim was not attained, it is believed that the results obtained came closer to successful achievement than any hitherto reported; the reasons for this relative success are discussed.

The strain of *T. vivax* was isolated from a sheep infected in nature in Northern Nigeria, and was subsequently maintained in sheep by cyclical transmission through *Glossina palpalis*. In a series of 11 experiments involving the use of 69 rats the inoculation of relatively large quantities of infected sheep's blood produced infection in all but one of the rats.

Infections with *T. vivax* in white rats varied considerably in intensity, not only in individual rats but, even more markedly, in different groups of rats. As a rule, trypanosomes appeared in the peripheral blood of the rat within one or two days after inoculation, increased over a period of several (usually 3–7) days to reach a peak, and then declined more

or less rapidly (usually 1–3 days), to disappear completely from the peripheral blood. Thereafter no evidence of infection could be detected in the majority of the rats observed, but in some cases relapses occurred, sometimes of considerable severity. Infection with *T. vivax* was observed to cause definite indisposition in many of the rats used, but no case of fatality occurred. *T. vivax* in the rat appeared to retain its typical morphological and other characters.

Attempts to passage *T. vivax* by blood inoculation from rat to rat were successful in all the first subpassages (10 experiments involving 19 rats). At second rat-to-rat subpassage, two of seven rats used in four experiments proved to be refractory. Infections in rat-to-rat subpassage were, on the whole, milder than those observed in rats infected by inoculation of sheep's blood.

KLEINSCHMIDT, A. & SCHLEICH, F. (1951). Über den Feinbau von Trypanosomen. II. Geisseluntersuchungen. **[Structure of trypanosomes. II. The flagellum.]**—*Z. Tropenmed. u. Parasit.* **3,** 42-46. [Abst. from English summary. For part I, see *V.B.* **22,** 1284.] **3315**

The flagella of *T. brucei* were studied in detail by electron microscopy, the technique being described. A flagellum consists of several rather strong fibrils joined like a cable. It is covered by a fold of the periplast and so gives the undulating membrane its form. Fibrils of the flagellum are more resistant to the drying process of preparation than the fibrillary elements of the integument. The flagellum does not originate from the blepharoplast or a basal granule.

MARIENBERG, G. (1951). Kälte-Agglutinine bei Trypanosomiasis und Malaria. **[Cold-agglutinins in trypanosomiasis and malaria.]**—*Z. Tropenmed. u. Parasit.* **3,** 33-41. [Abst. from English summary.] **3316**

Cold-agglutinins in the serum of rats, rabbits and g. pigs infected with trypanosomes gave reactions similar to those found in human serum. In rats there was increase of trypanosomes and also reduction of cold-agglutinins after removal of the spleen. M. discussed the influence of the reticulo-endothelial system on the formation of cold-agglutinins and stated that they do not indicate tissue destruction. There is no relation between cold-agglutinins and osmotic resistance of erythrocytes. Cold-agglutinins were also found in patients with relapsing tertian malaria, titres varying widely. Cold-agglutinins cannot be considered specific antibodies, although they are absorbed. Their presence has little more diagnostic value than tests for blood sedimentation rate.

BARTHA, A. (1951). Adat a szarvasmarhák trichomonadosisának széro-diagnosztikájához. **[Serum diagnosis of bovine trichomoniasis.]**—*Mag. Allatorv. Lapja.* **6,** 166-167. [English and Russian summaries. Abst. from English summary.] **3317**

B. maintained that the complement fixation test is unsuitable for diagnosis.

—JAS. G. O'SULLIVAN.

KERR, W. R. & LAMONT, H. G. (1952). **The immune response in trichomoniasis.**—*Rep. XIVth Int. vet. Congr.* **2,** 16-20. [French and German summaries. Authors' summary copied *verbatim.*] **3318**

This paper discusses the possibility of a self-limiting factor in trichomoniasis. It shows that a local immunity may develop, but that this is of relatively short duration. It also shows that in some animals trichomonads persist at least through some three or four oestral periods, indicating the necessity for energetic methods in dealing with an outbreak.

The impracticability of vaccination as a means of control is also emphasized.

The relationship between the white blood corpuscles and immune phenomena is discussed. Experiments are cited showing that the white blood cells are of some significance in antibody reactions. The desensitization of the skin to the trichomonad antigen by the act of parturition is emphasized and the opportunity is taken to show that the intradermal tuberculin test may also be rendered valueless by the act of parturition.

FARMER, R. K., HUGHES, D. L. & WHITING, G. (1951). **Infectious enterohepatitis (blackhead) in turkeys: A study of the pathology of the artificially induced disease.**—*J. comp. Path.* **61,** 251-262. [Authors' summary copied *verbatim.*] **3319**

A study has been made of the general histopathology of experimental infectious enterohepatitis (blackhead) in young turkey poults. The experimental infection was produced by the rectal injection of diseased caecal tissue from freshly killed infected turkeys. The material for study was collected from the experimental birds by killing 3 birds on each consecutive day after infection up to the 12th day.

It has been demonstrated that the infection spreads from the caeca to the liver via the blood

stream, and that in the latter stages of the disease the spleen may become involved.

It has not been possible either to define the actual route of infection in the caeca or to add further information to the existing knowledge of the life cycle of the causative protozoon as it occurs in the host tissues.

DESOWITZ, R. S. (1951). **Age as a factor influencing fatal infections of histomoniasis in chickens.**—*J. comp. Path.* **61,** 231-236. [Author's summary copied *verbatim.*] 3320

Chickens of various ages were inoculated *per rectum* with a suspension of liver and caecal material from a turkey affected with histomoniasis. It was found that susceptibility to infection was dependent upon the age of the chickens.

The highest mortality (71 per cent.) occured in a group of birds 21 days old and the lowest (30 per cent.) in a group 34 days old.

MEJLBO, E. (1947). Coccidiose hos kalve i Danmark. [**Coccidiosis in calves in Denmark.**]—*Medlemsbl. danske Dyrlaegeforen.* **30,** 1-31. [Abst. from English summary.] 3321

Results are given from examinations of 10,247 calves or organs of calves between 1933 and 1946.

Coccidiosis was responsible for 64·32% of parasitic infections. The percentage of infections at various ages was given; all cases occurred between six days and one year of age.

The disease was shown to be widespread in Denmark and most common in October. The species involved are *E. zurni* and *E. smithi.*

Symptoms and parts of the intestine affected were described. The mortality rate is high and no treatments are beneficial except cultures of *Lactobacillus acidophilus* plus lactose.

—M. B. COOPER.

LEVINE, N. D. (1952). *Eimeria magnalabia* **and** *Tyzzeria* **sp. (Protozoa: Eimeriidae) from the Canada goose.**—*Cornell Vet.* **42,** 247-252. [Author's summary copied *verbatim.*] 3322

In a study of fecal samples from 48 Canada geese (*Branta canadensis interior*) collected in Illinois, *Tyzzeria* sp. was found in 32, and *Eimeria magnalabia* Levine, 1951, in 5. The sporulated oöcysts of *E. magnalabia* measured 16·3 by 22·3 μ. They were slightly ovoid, with a thick, brownish-yellow wall. The micropyle was surrounded by thick lips which hung down into the oöcyst.

HORTON SMITH, C. (1951). **Sulphaquinoxaline in the treatment of caecal coccidiosis in chickens caused by the coccidium Eimeria tenella (Railliet and Lucet, 1891).**—*Off. Rep. 9th World's Poult. Congr., Paris.* **3,** 3-8. [Author's conclusions amended.] 3323

Sulphaquinoxaline, when mixed in the food at a level of 0·05%, can be recommended as a means of controlling established infections of caecal coccidiosis in flocks of chickens. Treatment can be continued over seven days but for a considerably longer period if the drug is only fed at intervals. The recommended schedule for preventive medication, when using a feed concentration of 0·05% on an intermittent basis, is to offer chicks the medicated ration for two days and ordinary feed for three days, and so on over a four-week period.

BUCK, G. & RAMAMBAZAFY. (1950). Premier cas de *Nuttaliose* naturelle signalée à Madagascar. [*Babesia equi* **infection in horses in Madagascar.**]—*Bull. Soc. Path. exot.* **43,** 43-50. 3324

In 1949 the first case of *B. equi* was observed in an indigenous horse born and bred in Madagascar and the tick vector was thought to be *Uroboophilus fallax* [*Boophilus annulatus microplus*]. Gonacrine effected a cure.

—P. M. JAMES.

BUDNIK, V. S. (1951). [**Treatment of** *Babesia* **infection in horses.**]—*Veterinariya, Moscow.* **28,** No. 3. pp. 11-18. 3325

The curative and prophylactic values of a Russian preparation "tripancin" [composition not stated] were tested on horses with *B. caballi* infection.

Infected *Dermacentor marginatus* ticks were fed on seven foals and later the foals were given "tripancin" injections. Dosage(s) used, course of the disease, methods and period(s) of treatment, cross-infection tests and other relevant details were given for each foal. It was concluded that "tripancin" is curative and has a prophylactic effect lasting up to 82 days.

—F.A.A.

EGOROV, I. F. (1951). [**Counteracting the secondary effects of acaprin.**]—*Veterinariya, Moscow.* **28,** No. 3. pp. 23-24. 3326

In 16 horses with *Babesia* infection, when 0·05–0·1 g. of morphine in 1% solution was injected subcutaneously together with 0·0005–0·0006 g. per kg. of acaprin in a 5% solution, the depressant effects of the latter were nullified and cure was effected.—F.A.A.

PARAENSE, W. L. (1949). **The verification of the existence of a negative phase in the prepatent period of canine babesiasis transmitted by ticks.**—*Mem. Inst. Osw. Cruz.* **47,** 375-380. [In English. Author's summary modified.] 3327

Two dogs were infected with *B. canis* by the bite of 1,500 and 100 adult *Rhipicephalus sanguineus* respectively. In both dogs blood parasites were present after a prepatent period of six days. Through the prepatent period 5 ml. of blood were taken daily from each dog and inoculated intravenously into 10 puppies. From the latter, those which were inoculated on the 1st, 2nd and 3rd day of the prepatent period remained negative, while those inoculated on the 4th and 5th days became infected with *Babesia*.

In accordance with the knowledge obtained regarding the pre-erythrocytic development in the other haemosporidia, the results of these experiments may be interpreted as indicating the existence of an early developmental phase of the babesia in tissue cells of the vertebrate host, corresponding to a negative phase of the blood, and of at least three days' duration.

I. & II. Wilson, S. G. (1951). **An experimental study of East Coast fever in Uganda. III. A study of the East Coast fever reactions produced when infected ticks 31 days old are fed on susceptible calves in limited numbers over a period of 3 weeks. IV. A study of the East Coast fever reactions produced when infected ticks 171 days old were fed on susceptible calves in limited numbers over a period of 3 weeks.**—*Parasitology*. **41**, 23-35 & 36-45. [For previous parts, see *V.B.* **22**, 3065.] **3328**

I. Small numbers of 31-day-old nymphs of *Rhipicephalus appendiculatus*, raised from larvae that had fed on a calf with an acute infection of East Coast fever, were attached to the right ears of 12 susceptible zebu calves. *Theileria* appeared in the blood of all the calves, two failed to develop a rise of temperature, four had a very mild attack, and the other six typical East Coast fever, none died.

At an attempt to re-infect six of the calves three months later, using ten nymphs per calf, only one developed East Coast fever; this had not had a rise of temperature on the first occasion. Ten nymphs were attached to each of the other six calves, which were then put in a paddock infested with infected *R. appendiculatus*. One developed a very mild temperature reaction.

II. In a similar experiment using nymphs of the same batch, when 171 days old, results were less regular; attempts to re-infect 44 days later were more successful, indicating less substantial immunity. Detailed protocols are published.—F. B. Leech.

Lavrentev, P. A., Pavlovskaya, M. D. & Baiteryakov, B. M. (1951). **[Summer camps for cattle as a prophylactic measure against *Theileria* infection.]**—*Veterinariya, Moscow*. **28**, No. 4. pp. 33-34. **3329**

Cattle on two adjacent *Theileria*-infected farms were freed from *Hyalomma* ticks during the housing season and during the summers of 1948 and 1949 were dipped once and kept on pastures 3–4 km. away from those on which they had usually grazed. A few cases of theileriasis occurred in 1948 but none in 1949. The cattle on a third adjacent farm remained continuously on the old pastures and had a *Theileria* infection rate of the usual intensity.

—F.A.A.

Westphal, A. (1951). Eine neue Toxoplasmose-Komplementbindungsreaktion. **[A complement-fixation test for toxoplasmosis.]**—*Z. Tropenmed. u. Parasit.* **3**, 191-204. [Abst. from English summary.] **3330**

Toxoplasms may be separated from the cellular elements of peritoneal exudates by treatment with ultrasonic waves and simultaneous ionization. These purified toxoplasms form the basic material for a stable antigen extract suitable for the routine complement-fixation test (c.f.t.). Its specificity corresponded well with the Sabin-Feldman test in numerous animal experiments. Infected infants seldom produce specific antibody. In such cases the positive reaction of the mother must be considered. In addition to the c.f.t. the toxoplasmosis skin test is recommended, especially in the case of children. The antigen extracts for both these reactions are being produced commercially in the American Zone of Germany.

Weyer, F. (1951). Ein experimenteller Beitrag zur Frage der Übertragung von Toxoplasma gondii durch Arthropoden. **[Transmission of *Toxoplasma gondii* by arthropods.]**— *Z. Tropenmed. u. Parasit.* **3**, 65-72. [Abst. from English summary.] **3331**

Natural and artificial infection with *T. gondii* was attempted of ticks (*Ornithodoros moubata*), rat mites (*Liponyssus bacoti*), mosquitoes (*Anopheles stephensi*, *Aedes aegypti*), flour beetle larvae (*Tenebrio molitor*), bed bugs (*Cimex lectularius*) and human body lice (*Pediculus humanus*). Comparatively large doses were given for artificial infection. In none of these experiments did cell or organ invasion with toxoplasms take place.

After intracoelomal infection toxoplasms survived in the coelom fluid up to 13 days. The organism could be recovered from smears and

transmitted to mice unimpaired in virulence and viability.

These findings contra-indicate any affinity between toxoplasms and arthropod tissues. Blood-sucking ectoparasites and other arthropods would appear to be ruled out as vectors of toxoplasmosis.

MÜHLPFORDT, H. (1951). Das Verhalten Sarcosporidien-infizierter Tiere im Sero-Farbtest auf Toxoplasmose nach Sabin-Feldman. **[Results of the Sabin-Feldman toxoplasmosis test in animals infected with sarcosporidia.]**—*Z. Tropenmed. u. Parasit.* **3**, 205-215. [Abst. from English summary.] 3332

The serological reaction of animals infected with sarcosporidia was tested using the Sabin-Feldman reaction. By infection tests with g. pigs, rats and golden hamsters it was proved that in animals with previously negative reactions, antibodies which could be demonstrated by the Sabin-Feldman reaction were produced after a single feeding of sarcosporidia, titres up to 1:400 being demonstrable. The titres remained constant for a long time. Parasites were proved in all histologically examined test animals.

Serum from 45 sheep was examined for the presence of antibodies. In 12 of the sheep, besides a positive Sabin-Feldman reaction the presence of parasites at the pharynx could be proved microscopically. Ten of the sheep had a positive titre, though no parasites could be found in the pharynx. The authors discussed their reasons for considering a sarcosporidial infection probable, even in these cases. From these data it was considered that 22 of the tested sheep were infected with sarcosporidia.

WESTPHAL, A. (1951). Abhängigkeit der Titerhöhe des Sabin-Feldman-Testes vom Methylenblau. **[Dependence of the titre in the Sabin-Feldman test on the kind of methylene blue used.]**—*Z. Tropenmed. u. Parasit.* **3**, 72-77. [Abst. from English summary.] 3333

Sensitiveness of the Sabin-Feldman test for toxoplasmosis depends largely on the sample of methylene-blue used. Using different commercial products titres may vary widely. The brands of methylene-blue mostly used in Germany yield titres lower than those of American workers (Sabin, Frenkel). Titre figures should not be compared for clinical purposes without taking these divergences into account.

PLOWRIGHT, W. & YEOMAN, G. (1952). **Probable *Encephalitozoon* infection of the dog.**—*Vet. Rec.* **64**, 381-383. [Authors' summary modified.] 3334

Two further cases of *Encephalitozoon* infection in dogs which were litter-mates, 8–10 weeks old, were described. One was the first acute case of this disease so far reported. Clinically, it showed some resemblance to rabies. Attempts to transmit the infection to laboratory animals with glycerin-preserved brain material were unsuccessful.

PLOWRIGHT, W. (1952). **An encephalitis-nephritis syndrome in the dog probably due to congenital encephalitozoon infection.**—*J. comp. Path.* **62**, 83-92. [Author's summary modified.] 3335

A condition of three members of a litter of six Foxhound puppies was described pathologically and clinically. All six died or were destroyed after a similar clinical course. A nephritis and meningo-encephalomyelitis similar to that occurring in rabbits with *Encephalitozoon* infection was found. A parasite identical in nearly all respects to that found in the rabbit and other rodents was demonstrated in lesions of two of the three puppies. Previous observations on similar organisms in dogs were reviewed briefly.

MCCAREY, A. G. (1952). **Balantidiasis in South Persia.**—*Brit. med. J.* Mar. 22nd, 629-631. [Author's summary copied *verbatim*.] 3336

A series of 87 cases of balantidiasis among the workers of a large industrial concern in South Persia is described. The mode of infection is assessed, the method of the investigation outlined, and the result of treatment stated.

It is stated that pigs played no part in transmission of the disease, that man-to-man transmission is strongly suggested, and that acetarsol is an effective drug in the treatment of balantidiasis.

See also absts. **3260** (Sabin-Feldman test in toxoplasmosis); **3548-3549** (bovine sterility); **3572** (report, East Africa High Commission).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

CAMARGO, N. F. (1952). La lutte contre la fièvre aphteuse au Mexique au moyen de la vaccination. **[The control of foot and mouth disease in Mexico by use of vaccines.]**—*Bull. Off. internat. Épiz.* **37**, 128-133. 3337

The method of preparation of vaccine and tests for potency and safety are outlined. The protective power of 2 ml. injected into the tongue lasted at least 90 days. Re-vaccination maintained the level of immunity, but did not

augment it. Vaccine prepared from virus cultures had little immunizing power.—Roy Mack.

Ramon, G. (1952). Au sujet de l'épizootie actuelle de fièvre aphteuse. Considérations épidémiologiques, virologiques et immunologiques. Données pratiques. [**The present epizootic of foot and mouth disease in Europe.**]—*Bull. Off. internat. Épiz.* **37**, 102-121. 3338

The spontaneous appearance of variants of the virus is characteristic of the present epizootic in Europe. R. discussed the causes of this variation. He described the preparation and use of a trivalent vaccine and a plan for the control of the disease.—Roy Mack.

Flückiger, G. (1951). Considérations sur l'éradication de la fièvre aphteuse en Europe. [**The problem of eradication of foot and mouth disease in Europe.**]—*Bull. Off. internat. Épiz.* **35**, 719-733. 3339

Recommendations and resolutions passed at previous conferences were reviewed and it was shown that few of these have been observed. Police measures were shown to be non-existent in some countries and methods of disinfection varied. The formation of variant strains of virus was considered to be the most important factor in favour of a slaughter policy and experimental work was quoted in support of this view. Recommendations were made on control measures.—G. V. Laugier.

Willems. (1951). Compte rendu des séances de la Conférence européenne sur la fièvre aphteuse. [**Proceedings of the European conference on foot and mouth disease, 8th Nov. 1951.**]—*Bull. Off. internat. Épiz.* **35**, 690-718. 3340

An outline of the situation in each member country was given. A general discussion on this information was followed by a number of resolutions. Recommendations included: slaughter of affected animals, isolation and disinfection of infected premises, prohibition of fairs and markets, control of imports and animal traffic. The creation of a centre of study for virus types and variants was recommended. Vaccination should be under state control. A subsidiary recommendation involved the reporting of disease, control and progress in each country. A demonstration of Swiss methods of control was given and is similar to that employed in Great Britain with the addition of the compulsory stabling of all stock within an infected zone, and the use of vaccines in surrounding areas.—G. V. Laugier.

Anon. (1950). Anais da I Conferência Nacional de Febre Aftosa. [**Proceedings of the foot and mouth disease Conference, Rio de Janeiro, Sept. 1950.**] pp. 228. Rio de Janeiro. Minist. Agric. Dep. Nac. Prod. Anim. 3341

At a meeting convened by the National Congress of Brazil discussions were held on F. & M. disease in its various aspects. Recommendations were put forward for a nation-wide campaign against the disease, directed towards control rather than complete eradication.

For the administrative work, the conference proposed the organization of State Executive Commissions, supervised by a Central Executive Commission. The business of these commissions would be to organize and carry out the plan submitted by the conference, and to integrate the work of all the organizations concerned.

The basic essentials of a successful campaign against F. & M. disease were considered to be:- (1) the production of vaccine and serum on a large scale and under suitable control; (2) the strict application of sanitary police measures and the uniformity of such measures throughout the country; (3) constant research should be carried out on the technical aspects of the subject; (4) records should be kept of all outbreaks and a study made of the epidemiology. Stockbreeders should be kept informed by means of intensive propaganda of the defensive measures available.

The conference recommended that the numbers of veterinarians, biologists and sanitary inspectors should be increased in order to carry out the provisions of the plan. Finally it was suggested that a further meeting should be held in 1952 to review the situation.

—I. W. Jennings.

Bachrach, H. L. (1952). **The determination of the sedimentation constant of a homogeneous component having the characteristics of the foot-and-mouth disease virus.**—*Amer. J. vet. Res.* **13**, 13-16. [Author's summary copied *verbatim*.] 3342

Guinea pig type O virus of foot-and-mouth disease was purified and concentrated by two cycles of differential centrifugation. Sedimentation diagrams of the clarified viral lymph and its ultracentrifugal fractions were made. Normal guinea pig lymph and fractions obtained from it by the same method as used with the viral lymph were similarly examined. It was found that both normal and viral lymph contained a protein component with a sedimentation constant (S_{20}) of 17 to 19 S. This protein was present in about equal concentration in

both solutions and remained in the supernatants from the first high speed runs. The purified virus solution (ultraprecipitate suspension from the second differential run) was one-twelth the volume of the clarified viral lymph and about six times more infectious ($12/10^{0.3}$), but contained only a single component with an S_{20} value of 137 S. From this and other evidence which is presented, it appears that the 17 to 19 S component is a normal constituent of guinea pig lymph, and that the 137 S component is very probably type O guinea pig virus of foot-and-mouth disease.

BACHRACH, H. L. (1952). **An investigation of the foot-and-mouth disease virus by the use of electrophoresis in filter paper.**—*Amer. J. vet. Res.* **13**, 17-20. [Author's summary copied *verbatim*.] 3343

By the use of a method of microelectrophoresis in filter paper strips and only 0·02 ml. of guinea pig vesicle lymph diseased with foot-and-mouth disease virus (O strain), the velocity of the virus at pH 7·6 relative to that of normal lymph protein constituents was determined. More than 93 per cent of the infectivity of the virus was found in the middle zone of three distinct electrophoretic zones of protein. The leading, intermediate, and tailing zones contained about 0·1, 93·5 and 6·4 per cent, respectively, of the total infectivity, as determined by titration in guinea pigs. It is concluded that at pH 7·6 the viral particle has a mobility which is similar to that of the β-lymph globulins.

The small quantity of material necessary for the present analysis suggests that the method used may prove of great usefulness in orientation experiments on valuable protein solutions prior to further separation or quantitative analysis in the Tiselius-type apparatus.

FRENKEL, H. S. & DUNNE, H. W. (1952). **Research on foot-and-mouth disease. Cultivation of the foot-and-mouth disease virus in explanted epithelium of the bovine tongue. IV. Tissue and medium variations.**—*Amer. J. vet. Res.* **13**, 21-23. [Authors' summary and conclusions copied *verbatim*.] 3344

The results showed that the entire epithelium, including the keratinized superficial layer of the bovine tongue, can be used satisfactorily in the propagation of the foot-and-mouth disease virus. The increase of cysteine hydrochloride had no conclusive benefit on the cultivating process. It was found that foot-and-mouth disease virus could be cultivated in a medium other than Baker's fluid, but titers of virus grown in Baker's fluid medium were higher. When extracts of the keratinous superficial layer of the lingual epithelium were added to the medium, little benefit was noted.

Mexican MP (Mexican Puebla) strain of Vallée type A virus was cultivated in cultures in which the entire epithelium was used. Little success accompanied trials in which either upper or lower layers of epithelium alone were used with this virus strain. Cultures in which there were additions of arginine and lysine, elimination of serum, and reduction of peptone in the medium maintained high titer. However, evidence was insufficient to state that the modifications were advantageous.

MICHELSEN, E. (1951). Essais d'adaptation du virus aphteux à l'oeuf de poule avec adjonction de tissus en survie. [**Attempts to cultivate the virus of foot and mouth disease in the chick embryo.**]—*Bull. Off. internat. Épiz.* **35**, 574-576. 3345

M. described successful culture of F. & M. disease virus in chick embryos to which bovine tongue epithelium had been added. Serial passages were effected, but virus disappeared in all cases where attempts were made to continue culture in the absence of bovine tissue.

—G. V. LAUGIER.

DEMNITZ. (1951). Du vaccin aphteux préparé avec du virus de l'oeuf de poule. [**Foot and mouth disease vaccine prepared in the chick embryo.**]—*Bull. Off. internat. Épiz.* **35**, 577-579. 3346

Work on egg passage of F. & M. disease virus of type O was reviewed and it was shown that at the 145th serial passage the virus had lost its infectivity for cattle and gave a specific immunity, At the 198th passage the virus had become non-infective for pigs. Similar work with Type A virus showed it to be non-infective for pigs at the 70th passage and non-infective for cattle at the 72nd passage. Further work on the stability of vaccines prepared in this manner is in progress.—G. V. LAUGIER.

MANSO, M. F. (1951). La fixation du complément pour l'identification des types et variantes du virus aphteux. [**The complement-fixation test in typing of foot and mouth disease virus.**]—*Bull. Off. internat. Épiz.* **35**, 651-664. 3347

Methods of identification were enumerated. M. prefers the complement-fixation test and described the technique employed. During the period 1945-50, 29 strains were identified together with variants O3 and O4. All results were confirmed by cross-immunity tests.

—G. V. LAUGIER.

UBERTINI, B. (1951). Observations et recherches sur les différents virus de la fièvre aphteuse qui ont sévi dans la plaine du Pô pendant les dix dernières années. [**Types of foot and mouth disease virus encountered during the last decade in the valley of the Po, Italy.**]—*Bull. Off. internat. Épiz.* **35**, 627-643. 3348

Problems associated with the division of virus into types and variants were studied in the Po valley. It was shown that variants of the same type have varying antigenic structures and antigenic properties of variants vary from strain to strain. Preparation of vaccines from specific outbreaks is not always justified and the use of variants of higher antigenic value capable of protecting against other variants is advocated. Variant O2 is capable of replacing Types A and C virus in an outbreak. Variant O1 is, however, supplanted by A4. Variants of Type C virus occur and a further variant of Type A has been isolated.—G. V. LAUGIER.

MATA, E. G., PIZZI, L. & ARAMBURU, H. (1951). El cultivo del virus aftoso en el ratón y en la rata blanca. Su aplicación en los problemas de la virologia. [**Infection of unweaned rats and mice with foot and mouth disease virus.**]—*Gac. vet., B. Aires.* **13**, No. 74. pp. I-VIII. 3349

The authors have been able to raise the virulence and antigenicity of F. & M. disease virus to a high level by passage through rats under 24 hours old, and mice less than 10 days old. The increased virulence is obtained after only a few passages. They recommend the use of this method in the investigation of other virus diseases of animals.—I. W. JENNINGS.

TONDO, M. C. V. (1951). Inactivation, par des photons d'ultraviolet, du virus de la fièvre aphteuse adsorbé sur hydroxyde d'aluminium. [**Inactivation of foot and mouth disease virus by ultra-violet light.**]—*Bull. Off. internat. Épiz.* **35**, 599-606. 3350

T. described the apparatus and technique used in experimental work on Type O virus adsorbed on aluminium hydroxide and diluted with distilled water. Exposure for 80–160 sec. to ultraviolet light destroyed infectivity, but immunological properties were retained. Protection was effective against 10,000 M.I.D.

—G. V. LAUGIER.

MOOSBRUGGER, G. A. (1951). Essais d'atténuation du virus aphteux par les rayons ultraviolets. [**Attenuation of foot and mouth disease virus by ultra-violet light.**]—*Bull. Off. internat. Épiz.* **35**, 607-610. 3351

M. described the apparatus used for the irradiation of F. & M. disease virus. This was designed with a view to overcoming technical and economic difficulties which would arise in the commercial use of existing apparatus. Early practical results were quoted.—G. V. LAUGIER.

SCHANG, P. J. (1951). Essais expérimentaux avec quelques variantes des vaccins anti-aphteux à l'hydroxyde d'aluminium. [**Trials of some modified adsorbate vaccines against foot and mouth disease.**]—*Bull. Off. internat. Épiz.* **35**, 677-683. 3352

S. described experimental work on trivalent adsorbate vaccines. Variations of the vaccine were made including the addition of chloroform, neutralization with serum, attenuation by storage and formolization. The most solid immunity observed followed a second injection with a living adsorbate vaccine.

—G. V. LAUGIER.

GIRARD, H. & MACKOWIAK, C. (1951). Essai de stabilisation du vaccin Schmidt-Vallée-Waldmann. [**Attempts to stabilize foot and mouth disease adsorbate vaccine.**]—*Bull. Off. internat. Épiz.* **35**, 580-594. 3353

The authors gave an account of work on the value of glycerin as an antigenic stabilizer and as an adjuvant and immunity stimulating agent. It was conclusively shown that glycerinated Schmidt-Vallée-Waldmann vaccine does not gel above −16°C., and its immunological value is not destroyed by freezing. Its antigenic properties remain unaltered after exposure for 48 hours at 37° C.—G. V. LAUGIER.

HOBOHM, K. O., PETERMANN, H. G. & FORREST, G. E. (1951). Recherches sur la présence des antigènes de types spécifiques fixateurs du complément dans les vaccins adsorbés contre la fièvre aphteuse. [**Type-specific complement-fixing antigens in adsorbate vaccines against foot and mouth disease.**]—*Bull. Off. internat. Épiz.* **35**, 744-747. 3354

The authors described briefly the technique for analysis of adsorbate vaccines by type-specific complement fixation. Advantages of simplification are claimed and it is thought to be a useful method of preliminary examination.

—G. V. LAUGIER.

WILLEMS, R. (1951). Note sur la durée de validité du vaccin anti-aphteux à l'hydroxyde d'alumine. [**Duration of potency of adsorbate foot and mouth disease vaccine.**]—*Bull. Off. internat. Épiz.* **35**, 668-671. 3355

Aluminium adsorbate vaccines up to four years old were shown to be as active and potent

as fresh vaccines. W. considers that stability of pH and scrupulous conservation at 3° C. in the dark account for the long duration of potency.—G. V. Laugier.

Moosbrugger, G. A. (1951). Observations sur l'effet de l'adjonction de glycérine au vaccin anti-aphteux. [**The effect of adding glycerine to foot and mouth disease vaccine.**]—*Bull. Off. internat. Épiz.* **35**, 595-598. 3356

Further work on glycerinated vaccine revealed that 10% glycerin markedly reduced the amount of aluminium hydroxide required for total adsorption; adsorption was more complete. In immunization tests on cattle the vaccine retained its immunological properties despite previous exposure to wide temperature variations.
—G. V. Laugier.

Girard, H. & Mackowiack, C. (1951). La concentration du vaccin anti-aphteux et la notion de variante. [**Concentration of foot and mouth disease vaccines.**]—*Bull. Off. internat. Épiz.* **35**, 665-667. 3357

It was shown that a 4% concentration of standard Type O virus in vaccines affords total protection against Type O variants. It is thought that similar results are possible with Type A virus.—G. V. Laugier.

Schang, P. (1951). Les porteurs de virus en relation avec les plans d'immunisation anti-aphteuse. [**Carriers of virus in relation to immunization against foot and mouth disease.**]—*Bull. Off. internat. Épiz.* **35**, 672-676. 3358

Experience over a number of years was quoted to show that virus carriers following immunization are extremely rare.
—G. V. Laugier.

Field, E. J. (1951). **The pathogenesis of rabies following inoculation into the masseter muscle.** — *J. comp. Path.* **61**, 307-314. [Author's summary slightly modified.] 3359

Inoculation of the masseter muscle of the rabbit with fixed rabies virus does not lead to an early paralysis of the masticatory muscles of the same side. In five out of thirteen animals paralysis began in the hind limbs.

Severe lesions occur in the dorsal root ganglia of both sides and are much less intense in the lumbar than in the cervical region.

No lesion was found in the corresponding motor nucleus of the fifth nerve even when there was already evidence of widespread involvement of the nervous system.

Spread by the blood stream and cerebrospinal fluid is briefly considered.

Reagan, R. L. & Brueckner, A. L. (1951). **Effect of rabies street virus in the cotton rat and the Swiss albino mouse.**—*Proc. Soc. exp. Biol., N.Y.* **78**, 702-703. [Authors' summary copied *verbatim*.] 3360

A strain of rabies isolated form a dog brain and passaged intracerebrally 2 times in Swiss albino mice and one time in cotton rats has been successfully transmitted to the same rodents by the following routes of exposure: intracerebral, intraperitoneal, intradermal, intramuscular, intracardial, intralingual, oral and rectal. The cotton rats and Swiss mice were equally responsive to this strain by the above routes of exposure. Mice were susceptible to intranasal instillation but cotton rats exposed by this method remained symptom free during a 30-day observation period and there was no evidence of Negri bodies when their brains were examined at the end of that time. This strain of virus, which had produced furious rabies in Syrian hamsters in a previous experiment, produced the dumb form of rabies in the cotton rat and Swiss albino mice.

Brownlee, K. A. & Hamre, D. (1951). **Studies on chemotherapy of vaccinia virus. I. An experimental design for testing antiviral agents.**—*J. Bact.* **61**, 127-134. [Authors' summary copied *verbatim*.] 3361

A test for antivaccinia virus agents is described, using chick embryos. With virus concentrations of approximately 20 to 3,500 LD_{50} units the reciprocal survival time has a constant variance and is linearly related to the logarithm of the virus concentration. Accordingly a six-point assay form of test was used and the activity of antiviral agents denoted by the logarithm of the factor by which they reduce the effective virus concentration.

The results of a series of tests of *p*-aminobenzaldehyde, 3-thiosemicarbazone are given. Analysis of variance confirms the assumptions of the tests and supplementary experiments confirm the numerical value for the activity.

Nauck, E. G. & Nasemann, T. (1952). Histologische Untersuchungen an normalen und mit Virus beimpften Chorion-Allantois-Membranen bebrüteter Hühnereier. [**Histology of normal and vaccine-virus inoculated chorio-allantois of embryonated eggs.**]—*Z. Tropenmed. u. Parasit.* **3**, 271-283. [English summary modified.] 3362

Normal and vaccine-virus-inoculated allantois of embryonated eggs were examined by various staining methods and the histology of focal lesions was studied.

Statements of British and American workers who have warned not to pass hasty judgement on specificity and intensity of virus infections from allantois findings only, were confirmed. In order to draw conclusions from the increase of virus in allantoic membranes, serological and transmission tests are necessary, and also electron microscopy.

SCHANG, P. J. (1952). La variole des porcelets. Sa transmission par l'Haematopinus suis et sa profilaxie. **[Swine pox, its transmission by *Haematopinus suis* and its prevention.]**—*Rep. XIVth Int. vet. Congr.* **2,** 421-423. [In French. English and German summaries. English summary slightly modified.] **3363**

Numerous tests carried out and described since 1926 by the author show that swine pox is transmitted by *H. suis*. In the Argentine, swine pox never appears without *H. suis*. Outbreaks in a louse-infested herd disappear within eight days after delousing. All delousing baths are suitable for this prophylaxis. In the Argentine, a petroleum emulsion of soap is preferably used. The method has never failed during these last 22 years.

PIERCY, S. E. (1952). **The immunising properties of an egg-adapted strain of fowl pox virus.** — *J. comp. Path.* **62,** 152-160. [Author's summary modified.] **3364**

The adaptation of a Kenya strain of fowl pox virus to the chorio-allantoic membrane of embryonated eggs was described. When used as a vaccine, consisting of infected chorio-allantoic membranes suspended in glycerin and broth, the egg-adapted virus provoked a solid immunity, lasting at least 12 months against challenge with homologous scab virus. The egg-adapted vaccine remained viable for 6–12 weeks at room temperature and for 6–12 months at refrigerator temperature.

SPRUNT, K. & HIRST, G. K. (1952). **Isolation of a new infectious agent from the vesicles of chicken pox.**—*Proc. Soc. exp. Biol., N.Y.* **80,** 178-181. [Authors' summary modified.] **3365**

Four strains of a rickettsia-like agent were isolated by two methods from chicken pox vesicular fluid. These agents produced pocks on the chorioallantoic membrane of chick embryos, were pathogenic for g. pigs by several routes and appeared to grow only within the cytoplasm of cells. Their origin and relationship to human or other naturally occurring disease is obscure.

YOUNG, G. A., JR. & UNDERDAHL, N. R. (1951). **Incidence of influenza in swine as shown by hemagglutination - inhibition seral titers.**—*Proc. 88th Ann. Meet. Amer. vet. med. Ass.* Milwaukee. Aug. 20-23, 1951. pp. 164-169. [Authors' summary copied *verbatim*.] **3366**

Tests for the incidence and type of influenza were made on 1,273 serums obtained from swine from ten scattered areas in Iowa and Minnesota over a two-year period. These serums were tested for hemagglutination-inhibition antibodies to swine influenza virus, human type A viruses, strains Weiss and PR-8, and to human type B virus, strain Lee.

The survey for 1949-50 showed that swine were attacked primarily by viruses of the swine and Weiss antigenic types. The incidence of titers for PR-8 and Lee viruses was negligible. In the 1950-51 survey, however, the incidence of PR-8 type of infection among swine was greater than that of swine influenza. Titers to Lee virus were also observed in 1950-51.

The results of the survey indicate that in addition to swine influenza—a disease apparently unique in American swine—Midwestern swine may be attacked by influenza viruses antigenically related to the human influenza viruses. Thus, some of the respiratory problems in Midwestern swine are similar to those encountered in European swine.

MURPHY, J. S. & BANG, F. B. (1952). **Obervations with the electron microscope on cells of the chick chorio-allantoic membrane infected with influenza virus.**—*J. exp. Med.* **95,** 259-268. [Authors' summary slightly modified.] **3367**

Preparations of influenza-infected chick chorio-allantoic membrane made by two types of tissue culture and by sectioning, were studied in the electron microscope. Comparisons were made of influenza A′ (FM1), influenza A (PR8), and swine influenza (V15), three strains which produce different relative numbers of filaments.

Normal surface projections which may be confused with influenza filaments were described. Extruded products of degenerating cells, usually bleb-shaped, were also found both in uninfected allantoic fluid and tissue cultures.

It appeared that the filaments and spheres of influenza virus, concurrently projecting from the free cell surface, represented the only visible change in the cells until late in the infection. No definite evidence of a generalized infection throughout the cytoplasm or of inclusions was found. Additional evidence was presented for

the assumption that the filaments have a significant role in the final development of the free virus.

REEVES, W. C. (1951). **The encephalitis problem in the United States.**—*Amer. J. publ. Hlth.* **41,** 678-686. [Author's summary copied *verbatim.*] **3368**

A review of the encephalitis problem [in man] in the United States indicates that it is desirable to limit this consideration to three specific infections, Western equine, Eastern equine, and St. Louis encephalitis, all of which are characterized by having arthropod vectors.

The known distribution of these diseases and the number of recognized cases indicate these infections as widespread in North America, but as—so far—a relatively minor public health problem. Certain factors such as the occasional major epidemics observed, widespread epizoötics in horses, limited demonstration of control methods, and possible future changes in the balance of environmental factors have led to the belief that these diseases may have an epidemic potential.

A consideration of the natural history of these agents indicates a complicated infection chain characterized by a completely inapparent infection in nature. This involves birds as hosts and mosquitoes as vectors, with mites or some unknown factor serving as a long-term reservoir. Inapparent infection may become a public health problem when the mosquito vector transfers the causative agent to clinically susceptible human hosts.

In most of North America the need for, or advisability of, developing a local control program cannot be evaluated until local health departments determine the extent and nature of the problem in their areas.

In those epidemic and endemic areas where necessary studies have been made, it has been concluded that a control program based on protection from mosquito vectors offers great promise. In the event of a recognized epidemic of Western equine, St. Louis, or Eastern equine encephalitis, the author would recommend a control program based on individual personal protection from mosquito vectors and, if practical, specific vector abatement.

It will be important for public health departments to keep abreast of new developments in this field, as current comprehensive investigations by federal, state, and university research workers will undoubtedly clarify the many unanswered questions presented today.

REEVES, W. C., HAMMON, W. McD., LAZARUS, A. S., BROOKMAN, B., MCCLURE, H. E. & DOETSCHMAN, W. H. (1952). **The changing picture of encephalitis in the Yakima Valley, Washington.**—*J. infect. Dis.* **90,** 291-301. [Authors' summary copied *verbatim.*] **3369**

Avian and mammalian hosts, mosquito vectors, and possibly mite vectors are believed to be involved in the infection chain of Western equine and St. Louis encephalitis. Studies in the Yakima Valley during epidemic years partially clarified the role of each of these components, with the possible exception of mites. Investigations in 1949 indicated that the population of susceptible avian hosts was large, but that the population of mosquito vectors had dropped sharply. Concomitantly, evidence was found of a dramatic decrease of virus infection in these hosts and vectors. No evidence could be found that mites were serving as vectors or reservoirs of infection in the absence of mosquito transmission. The clinical attack rates in man and horse were lower at the same time.

The only obvious change in the epidemiological picture was in the population of mosquito vectors. Widespread application of agricultural insecticides apparently accomplished accidentally what might be done purposefully in a vector control program.

A study of this situation does not have the advantages of a prearranged, carefully controlled study, but the findings are enlightening in the interim until such studies are undertaken.

ANDERSON, S. G., DONNELLEY, M., STEVENSON, W. J., CALDWELL, N. J. & EAGLE, M. (1952). **Murray Valley encephalitis: surveys of human and animal sera.**—*Med. J. Aust.* Jan. 26th, 110-114. [Authors' summary slightly modified.] **3370**

The forty cases of encephalitis which occurred in human beings in the Murray Valley in 1951 were probably due to a single type of virus. Complement-fixing antibody to Murray Valley encephalitis (MVE) virus has been found in human beings and horses along the eastern portion of Australia from Cairns to the Victorian Great Dividing Range. The area of maximum incidence of human antibody to Murray Valley encephalitis occurs in the Mildura-Wentworth area in the north-west of Victoria and the south-west of New South Wales. No patient with Murray Valley encephalitis was known to have been infected in southern Victoria.

Murray Valley encephalitis antibody is present in native and domestic birds in the

Murray Valley. It is likely that birds are the primary reservoir of infection from which mosquitoes transfer the virus to man and animals.

BURNET, F. M. (1952). **Poliomyelitis and Murray Valley encephalitis: a comparison of two neurotropic virus diseases.**—*Med. J. Aust.* Feb. 9th. 169-175. 3371

A comparison between these two similar neurotropic viruses revealed distinct differences and problems, particularly evident in the spread of infection. Poliomyelitis spreads through the whole populated area by transfer from one human being to another, probably by infected faeces. In Murray Valley encephalitis, a situation in which human beings, horses, domestic fowls and a variety of waterbirds over a wide area of country all show evidence of 20–50% infection, the virus is most probably transferred in more than one step by mosquitoes, the infection being maintained in a reservoir of wild birds.

Discussion of methods of prevention indicated that the use of living attenuated virus given by the alimentary route in infancy may be the only hope of prevention in the case of poliomyelitis.—A. H. LINTON.

REAGAN, R. L., SCHENCK, D. M., LINEWEAVER, H. O. & BRUECKNER, A. L. (1951). **Response of monkeys to poliomyelitis virus after injection with four strains of Newcastle disease virus.**—*Proc. 88th Ann. Meet. Amer. vet. med. Ass.* Milwaukee. Aug. 20-23, 1951. pp. 112-115. [Authors' summary copied *verbatim.*] 3372

Four groups of 10 monkeys each were given weekly intramuscular injections with four different strains of Newcastle disease virus (NDV): California, Connecticut, Delaware, and Minnesota. Twenty-eight days after the last intramuscular inoculation, all 40 monkeys, as well as 10 normal controls, were challenged intracerebrally with active poliomyelitis virus (Brunhilde strain). Although all the monkeys developed poliomyelitis, many of those previously injected with NDV evidenced a prolonged incubation period, a lower mortality rate and a more rapid rate of recovery. This was especially noticeable in those monkeys which had received the Minnesota strain of the virus.

FULTON, J. S. & BURTON, A. N. (1952). **Human encephalitis in Saskatchewan caused by the virus of Western equine encephalomyelitis.**—*Canad. J. publ. Hlth.* **43,** 212-220. [Abst. from authors' summary.] 3373

The authors outlined work done in Saskatchewan since 1939 in connexion with Western equine encephalomyelitis in human beings.

They carried out neutralization tests for the recognition of the acute disease and to determine if other diseases might be sequelae to a previous infection with W.E.E.; these revealed that mild cases of W.E.E. can be confused with more benign diseases such as influenza. The length of time positive reactions may continue after infection is quite variable, ranging from 33 months to 12 years. Mental disease may follow infection with the equine virus, the symptoms appearing some time after the acute illness.

REVO, M. V. & SHMALI, K. V. (1951). **[Serological diagnosis of equine encephalomyelitis.]**—*Veterinariya, Moscow.* **28,** No. 5. pp. 18-21. 3374

The authors described an agglutination reaction, using an antigen prepared by adding a suspension of the virus of equine encephalomyelitis to *Proteus mirabilis.* Sera of affected horses, of those recovered for some time and of recent contacts but still apparently healthy, agglutinated the *P. mirabilis* which had been so treated with the virus. This agglutination test gave parallel results with a complement-fixation test on 484 horses.—F.A.A.

MAURER, F. D., KUTTLER, K. L., YAGER, R. H. & WARNER, A. (1952). **Immunization of laboratory workers with purified trivalent equine encephalomyelitis vaccine.**—*J. Immunol.* **68,** 109-114. [Authors' summary copied *verbatim.*] 3375

A partially purified trivalent vaccine of chick embryo origin was prepared and used to immunize laboratory personnel against Eastern, Western and Venezuelan strains of equine encephalomyelitis. Individuals who had not previously received equine encephalomyelitis vaccines were given 0·75 ml. subcutaneously, while those who had received equine encephalomyelitis vaccines in the past were given a single booster of 0·1 ml. intradermally or 0·75 ml. subcutaneously. Antibody responses to annual booster immunizations were elicited satisfactorily when given by either the intradermal or subcutaneous routes of inoculation. The use of one intradermal trivalent booster to maintain immunity against these three diseases helps to simplify the immunization procedure.

KOROTKIKH, A. V. (1950). **[Diagnosis of equine infectious anaemia by an allergic reaction.]**—

Veterinariya, Moscow. **27,** No. 12. pp. 16-17. 3376

An account of a test for cases of equine infectious anaemia that do not have symptoms or the blood picture of affected animals. After the application of 4–5 drops of a preparation called "anemin Viev" [formula not given] to an eye [method of application not stated], a positive reaction started three hours later with sero-mucous discharge, conjunctivitis and, two hours later, a purulent discharge. Of 402 horses on various farms, 17–32% reacted. Horses with definite clinical signs and the blood picture of the disease, or those just recovered, gave negative results. All of 196 horses on farms free from the infection reacted negatively and continued healthy for the one year period under observation.—F.A.A.

KOSTENKO, A. I. (1951). **[Boshyan's findings on equine infectious anaemia.]**—*Veterinariya, Moscow.* **28,** No. 5. pp. 26-27. 3377

In his book ["On the nature of viruses and bacteria"— Medgiz, Moscow, 1949. Roubles 8·30.] Boshyan stated that he was able to produce mutation of the virus of equine infectious anaemia into a bacillary (rod-shaped) form which was infectious to mice and g. pigs, in which typical blood changes of the disease as seen in the horse occurred; also that he had prepared a vaccine and a diagnostic allergen for the latent form of the disease in horses. K. stated that he had been able to repeat these results.—F.A.A.

STECK, W. & HAUSER, H. (1948). Lungenbefunde bei der infektiösen Anaemie der Pferde (A.I.E.). **[Examination of the lungs in equine infectious anaemia.]**—*Schweiz. Z. allg. Path.* **11,** 365-377. [English, French and Italian summaries. Abst. from English summary.] 3378

Thirty-one lungs of horses with equine infectious anaemia and seven lungs from other cases were examined histologically. In all subacute and chronic cases of E.I.A. endothelial proliferation and cell accumulations could be found in the capillaries and other small vessels; in the latter there were also cushion-like depots and proliferations of the intima. These lesions are not found in other diseases, nor are they present in old latent or in very recent acute cases of E.I.A.

DHANDA, M. R. & MANJREKAR, S. L. (1952). **Observations on rinderpest amongst sheep and goats in the State of Bombay.**—*Indian vet. J.* **28,** 306-319. [Authors' summary copied *verbatim.*] 3379

Literature on rinderpest among sheep and goats in India is briefly reviewed. A widespread outbreak of rinderpest amongst sheep and goats as it occurred in the State of Bombay is described giving details of symptoms, lesions, histo-pathological changes as well as the results of biological tests carried out to arrive at a correct diagnosis. The possibility of the occurrence, in nature, of strains of rinderpest virus having some sort of a species specificity is briefly discussed.

BROTHERSTON, J. G. (1951). **Lapinised rinderpest virus and a vaccine: some observations in East Africa. I. Laboratory experiments. II. Field trials with lapinised vaccine.**—*J. comp. Path.* **61,** 263-288 & 289-306. [Author's summaries slightly modified.] 3380

I. The findings of Cheng and Fischman [*V.B.* **19,** 702] were confirmed at Kabete. The Nakamura strain III of lapinized rinderpest virus was also "fixed" for the local breeds of rabbits and during 21 passages at Kabete there was no increase in virulence for rabbits, or attenuation of the antigenic properties for cattle. Freeze-drying of the major virus-containing tissues of rabbits ensured the maintenance of the virus and dried material or "seed-virus" remained viable for long periods when kept under optimum conditions.

The symptoms and P.M. findings of infected rabbits at Kabete have closely simulated those reported by other workers. It was noted that the temperatures of normal rabbits kept under laboratory conditions were slightly lower than those generally accepted. Rabbits below the age of 4½ months did not react thermally when injected with the virus, but showed lesions typical of rinderpest; pregnant does were also unsuitable subjects for the propagation of the virus. Alternate passage in cattle and rabbits appeared to alter the character of the virus, which showed a decreased virulence for rabbits with an irregular and somewhat increased virulence for cattle.

Cohabitation of infected rabbits with non-infected rabbits and infected cattle with susceptible cattle, did not result in passage of the virus by contact to the susceptible animals.

In contradistinction to goat-adapted virus, lapinized virus provoked a very mild reaction in high and medium grade cattle at Kabete which could not be readily recognized. The development of an immunity in cattle so inoculated could not be determined until challenged with virulent rinderpest virus. The immunity induced by the injection of lapinized virus in susceptible cattle was sufficient to prevent clini-

cal symptoms of rinderpest after challenge with Kabete bovine virus.

Lapinized virus induced a serviceable protection in cattle challenged 84 hours and at 108 hours respectively, after inoculation.

II. In East Africa, freeze-dried, lapinized virus vaccine was used successfully for the control of rinderpest in the field. These results confirm the findings of Cheng and Fischman (1948) in China.

Indigenous zebu cattle, high and low-grade crosses of European breeds with zebu cattle, pure-bred European cattle and hyper-susceptible Ankole cattle were successfully immunized. Of these, only the Ankole cattle exhibited a marked clinical reaction as a result of inoculation with lapinized virus.

When vaccinated cattle were challenged by the subcutaneous injection of virulent rinderpest, the duration of the immunity was between 8 and 15 months. When tested by exposure to cattle infected with rinderpest, the immunity lasted 13 months.

The injection of lapinized virus had no adverse effect on pregnant cattle, and did not reduce the yield of cows in milk.

One experiment indicated that lapinized virus could be used for the re-immunization of cattle which had received a triple course of formolized-spleen vaccine one year previously.

Many thousands of cattle have been vaccinated with lapinized virus but so far comparatively few have been obtained for immunity tests at the laboratory. However, when lapinized virus has been used in Kenya, in areas where natural rinderpest was present, it has not once failed to protect the cattle. On one occasion, in a herd of 1886 grade cattle, some of which were infected with rinderpest, vaccination curtailed extension of the disease and considerably reduced fatalities.

Scott, G. R. & Brotherston, J. G. (1952). **The viability and potency of freeze-dried lapinised rinderpest vaccine.**—*J. comp. Path.* **62,** 108-115. [Authors' summary copied *verbatim*.] 3381

An investigation into the viability and potency of freeze-dried lapinized rinderpest vaccine is recorded.

It is emphasized that because of the absence of a marked thermal reaction in the majority of cattle inoculated with lapinized vaccine, great care is required to ensure that potent material is inoculated.

Piercy, S. E. (1952). **Studies in bovine malignant catarrh. II. Experimental infection of cattle (Continued) (i) Infectivity of materials other than lymph gland. (ii) Routes of inoculation.** — *Brit. vet. J.* **108,** 214-220. [Author's summary slightly modified. For part I, see *V.B.* **22,** 2492.] 3382

Cattle were infected with bovine malignant catarrh, using small quantities of lymph node, blood, spleen, and liver by the intraglandular, intravenous, intradermal, intramuscular, and subcutaneous routes. One animal was infected with 0·05 ml. of a concentrated white cell inoculum. It is considered that transmission with this comparatively minute dose suggests that circulating virus is attached to white rather than to red cells.

Oxy-carbol-glycerine preservative, commonly used for most animal viruses, was found to be unsuitable for the virus of bovine malignant catarrh.

There was evidence that transmission with materials low in virus content is most likely to be successful when the intraglandular route is used.

The virus used ("D") has reached a stage in its "adaptation" to needle passage when the subcutaneous inoculation of small quantities of material may safely replace the intraglandular technique.

Diesel, A. M. (1952). **The epizootiology of lumpy skin disease in South Africa.**—*Rep. XIVth Int. vet. Congr.* **2,** 492-500. [French and German summaries. Abst. from author's summary.] 3383

A new epizootic in Southern Africa affecting cattle only. It is an acute febrile infectious disease characterized by lumps in the skin. These lumps may appear in the mouth, pharynx, larynx and trachea. Swelling of the lymphatic glands and of the legs and joints may occur. Morbidity is usually 50% — 100%. Mortality may reach 75% but is usually about 1%. The disease is probably due to a filtrable virus 13 mμ in diameter. Virus strains have been isolated, cultivated on eggs and the egg-culture virus has produced lumpy skin disease in cattle. The disease can be transmitted experimentally by inoculation of infected blood and tissue material. Its natural method of spread is unknown but it is believed to be chiefly through the medium of an insect vector favouring moist conditions.

Stamp, J. T., Watt, J. A. A. & Cockburn, R. B. (1952). **Enzootic abortion in ewes. Complement fixation test.**—*J. comp. Path.* **62,**

93-101. [Authors' summary copied *verbatim.*] 3384

The complement fixation test has been used for the diagnosis of enzootic abortion in ewes.

Suitable antigens were prepared both from infected yolk sacs of the developing chick embryo and from infected membranes of the sheep.

The efficiency of the complement fixation test was assessed by testing blood sera from known infected sheep and from presumably non-infected sheep. A titre of 1/16 would appear to be suggestive of infection and titres over 1/16 are evidence of infection.

Complement-fixing antibody was present in the majority of cases within two weeks of abortion having taken place and was detectable for at least four months.

The complement fixation test was used to determine the incidence of infection on four farms. There appeared to be a high rate of infection especially in the 2nd and 3rd crop ewes: moreover, lambs and virgin sheep may give a positive reaction.

The sera of fourteen rams were negative.

Edgar, G., Hart, L. & Hayston, J. T. (1952). **Studies on the viability of the virus of swine fever.**—*Rep. XIVth Int. vet. Congr.* **2,** 387-391. [French and German summaries. Authors' summary slightly modified.] 3385

An outbreak of swine fever occurred in Australia towards the latter part of 1942 and was completely eradicated within five months by slaughtering out and burning of all pigs on infected farms. In New South Wales 48 outbreaks were diagnosed. The methods employed in establishing the diagnosis are described. These involved the use of Elford gradacol membranes in preparing bacteria-free filtrates for inoculation of susceptible pigs. Bacteriological examinations were made of all specimens received for diagnosis. This showed that 64·6% of the outbreaks were uncomplicated by concomitant infection with salmonella.

Experiments with frozen pork held at 12° F. from pigs killed in the incipient stages of swine fever have shown that the virus remains viable for 1,598 days and probably longer. Bacon prepared from pigs killed in the incipient stage of swine fever was capable of setting up infection after 27 days, but was non-infective after 57 days

Repeated exposures of susceptible pigs to an infected environment indicated that the infection did not persist for an extended period. Pigs became infected 24 hours after infected pigs had been removed from the environment but not after 48 hours.

Palacios, J. (1952). Un supuesto brote de enfermedad de Teschen. [**An outbreak of suspected Teschen disease.**]—*Bol. Inf. Col. Vet. Esp. Supl. cient.* **6,** 43-49. 3386

P. described a typical outbreak of Teschen disease in nine-week-old piglets in N.E. Spain. The diagnosis was not confirmed by laboratory examination.—I. W. Jennings.

Cabasso, V. J. & Cox, H. R. (1952). **A distemperlike strain of virus derived from a case of canine encephalitis: its adaptation to the chick embryo and subsequent modification.**—*Cornell Vet.* **42,** 96-107. [Authors' summary copied *verbatim.*] 3387

A strain of virus isolated in the ferret from a natural case of canine encephalomyelitis in a dog was successfully adapted to grow, and was serially passed, on the chorioallantoic membrane of embryonated hen's eggs for 58 passages. This egg-adapted virus retained its ability to produce in the ferret a disease indistinguishable from distemper through 38 generations of eggs. Beyond that egg passage it became modified, losing its infectivity but retaining its capacity to immunize ferrets against the lethal parent strain of virus. Cross-immunization and cross-neutralization experiments in eggs and ferrets pointed to the immunologic similarity between this agent and canine distemper virus. Preliminary field trials in puppies using the 48th passage of this virus in eggs as a vaccine, have demonstrated its safety to the dog and to some extent the degree of protection to be expected from this immunizing agent.

Reihart, O. F., Reihart, H. W. & Schenken, J. R. (1952). **Malignant canine lymphocytopenia with intracytoplasmic inclusions. Preliminary report.**—*N. Amer. Vet.* **33,** 174. [Authors' summary copied *verbatim.*] 3388

A disease, characterized by an acute infectious clinical picture with respiratory and gastrointestinal symptoms predominating, is described in which intracytoplasmic inclusions in the lymphocytes are the most striking feature. Transmission of the infectious agent by anti-canine distemper serum or by canine distemper virus is suggested as one means by which the disease may be produced.

Further studies are in progress.

Svenkerud, R. R. (1952). Fox encephalitis. I. Dens påvisning i Norge og et lite bidrag til dens patologiske anatomi. [**Fox encephalitis**

on fox farms in Norway; lesions.]—*Nord. Vet.-Med.* **4**, 1-13. [In Norwegian. English and German summaries. Abst. from English summary.] 3389

An outbreak of fox encephalitis in four fox farms in Norway was described The disease had not previously been observed in Norway. Cross-infection experiments were made in dogs and foxes. An experiment has also been made on transmission of contagious canine hepatitis from a spontaneous case in a dog to foxes. The virus of contagious canine hepatitis produced typical fox encephalitis in foxes; and fox encephalitis virus produced typical contagious canine hepatitis in dogs.

In experiments on neutralization of fox encephalitis virus, isolated from one of the above outbreaks, with specific contagious canine hepatitis serum from Sweden and specific fox encephalitis serum from Sweden and specific fox encephalitis serum from the U.S.A., both sera were found to afford protection against the infection.

The lesions were discussed and it was pointed out that the changes produced by fox encephalitis in foxes are nearer the changes produced in dogs by contagious canine hepatitis than was hitherto assumed.

SVENKERUD, R. R. (1952). **Fox encephalitis. II. A method which renders the diagnosis at autopsy easier and more reliable.**—*Nord. Vet.-Med.* **4**, 133-138. [In English. German and Norwegian summaries. Author's summary modified.] 3390

The finding of intranuclear inclusion bodies in cases of fox encephalitis was described. It has been found that such inclusions are present in large numbers in the endocardium and in the intima of the main stems of the large vessels. By taking scrapings from these sites and by making smear preparations, which are stained and examined for the presence of inclusion bodies, the diagnosis of the disease is facilitated, and it seems that in this manner a larger number of positive cases can be noted than by an ordinary autopsy combined with examination of microscopic sections. Moreover, the method can be easily and rapidly applied.

SVENKERUD, R. R. (1952). **Fox encephalitis. III. The complement fixation test applied for detection of antibodies in blood serum.**—*Nord. Vet.-Med.* **4**, 273-282. [In English. German and Norwegian summaries. Abst. from author's summary.] 3391

The complement fixation test was found to be very serviceable in fox encephalitis. The method of preparing the antigen is described and a brief account is given of the execution of the test. It was found that the limit for positive reaction ought to be set at 50% haemolysis with the serum dose 0·1 (total amount of fluid in the tube about 2·5 ml.). On infected fox farms it was found that a very high percentage of the animals had complement-fixing antibodies in the blood—even if they had shown no signs of disease. Of 193 blood samples from a large fox farm 137 gave positive reaction. On a small farm with 17 foxes 14 reacted positively. On a third farm with 21 foxes 19 had antibodies in the blood.

Tests made with two antigens prepared from organic material derived from two different outbreaks of fox encephalitis and with antigen from organs of a dog that died of infectious canine hepatitis—when tested with Swedish serum from dogs, with American therapeutic fox encephalitis serum and with sera from three spontaneous outbreaks on three different fox farms in Norway—revealed no demonstrable difference in titration limits. Attention is drawn to the importance of the complement-fixation test in the control of the disease.

HANSON, R. P. & SINHA, S. K. (1952). **Epizootic of Newcastle disease in pigeons and studies on transmission of the virus.**—*Poult. Sci.* **31**, 404-408. [Authors' summary copied *verbatim*.] 3392

An epizootic of Newcastle disease occurred in a flock of doves and pigeons housed in the same building with infected chickens. The susceptibility of pigeons and doves to several strains of Newcastle disease virus by contact, aerosol, oral and intravenous routes was shown. The possible role of pigeons and doves in the dissemination of Newcastle disease is discussed.

KASCHULA, V. R. (1951). **An observation on the pathogenesis of artificial Newcastle disease in pigeons.**—*J. S. Afr. vet. med. Ass.* **22**, 193-195. [Author's summary modified.] 3393

An experiment is described which shows clearly that the site of inoculation of Newcastle disease virus intramuscularly in pigeons is of importance in relation to the nervous symptoms eventually exhibited. Pigeons inoculated in the neck developed paralysis of the neck and finally died, without the wings and legs having been affected. Similarly when the virus was injected into the wings or legs, paralysis of the respective limbs occurred, without causing paralysis of the legs or wings respectively, before death supervened.

The course of the disease was more rapid in the case of those inoculated in the neck, than in those inoculated in the wings or legs.

Liu, C. & Bang, F. B. (1952). **Encephalitis and pneumonia following the intranasal inoculation of Newcastle disease virus in different strains of mice.**—*Amer. J. Hyg.* **55,** 182-189. [Authors' summary slightly modified.] **3394**

A chicken-adapted virulent strain of Newcastle disease virus (CG179 or CGMB) when inoculated intranasally into mice, will produce either pneumonia during the first few days or encephalitis 5–29 days after inoculation. Following intranasal inoculation, mice of different genetically homogeneous strains showed varying degrees of susceptibility to the pneumotropic and neurotropic effects of this virus. Intracerebral inoculation revealed that all strains of mice were susceptible. Older mice were more resistant than the recently weaned mice to the neurotropic effects but not to the pneumotropic effects.

Kilham, L., Loomis, L. N. & Peers, J. H. (1952). **Variations in behavior of two strains of Newcastle disease virus on passage through brains of adult mice.**—*Amer. J. vet. Res.* **13,** 95-98. [Authors' summary slightly modified.] **3395**

The Victoria and the California 11914 strains of Newcastle disease virus, after passage in unweaned mice, lead to characteristic clinical and pathological findings on intracerebral inoculation of adult mice. The Victoria strain was carried through ten successive passages in the brains of adult mice without change in the fundamental properties. Continued passage of the California strain 11914 was possible only in unweaned mice. The brains of adult mice which had developed a characteristic illness following inoculation with this virus were not infective for other mice. In the course of repeated mouse passages, the California strain could not be cultivated in eggs by any of the usual methods which were tried.

Newcastle disease virus produces a definite encephalitis, in both unweaned and adult mice, of a progressive type usually fatal within seven to ten days. In this experiment, its lesions appeared concentrated in the gyrus hippocampi and the frontal and temporal lobes. The brain was the only organ in which lesions were observed.

Reagan, R. L., Smith, E. J. & Brueckner, A. L. (1951). **Electron micrographs of Newcastle disease virus propagated in the cave bat (*Myotus lucifugus*).**—*J. Bact.* **61,** 37-40. [Authors' summary modified.] **3396**

Bat-passaged Newcastle disease virus from the first and second subinoculations in bats by the intracerebral route was 100% pathogenic for embryonated hens' eggs on the first embryo passage. The virus in the allantoic fluid of eggs inoculated with the bat brain material was neutralized by positive Newcastle disease serum but was not affected by normal fowl serum.

Electron micrograph studies of these virus particles at high magnification seem to bring out more detail in the tail-like structure of this virus.

Michalewicz, J. (1952). Wpływ penicyliny na zakażenie kur wirusem "Newcastle disease". **[Effect of penicillin in Newcastle disease.]**—*Méd. vét., Varsovie.* **8,** 260-261. **3397**

Four naturally infected fowls were given 100,000 I.U. penicillin intramuscularly daily for five days; one died and three survived; 25,000 I.U. given daily by the same route failed to prevent death in another group of four infected fowls.—W. J. Sojka.

Fomina, A. Y. & Ochkina, I. I. (1951). **[Immunization of fowls with serum of goats hyperimmunized with Newcastle disease virus.]**—*Veterinariya, Moscow.* **28,** No. 1. p. 51. **3398**

Over a period of eight months goats were hyper-immunized against Newcastle disease virus [no details except that a total of 465 ml. was given]. One ml. of serum from these hyper-immunized goats, injected intraperitoneally into fowls along with ten thousand lethal doses of Newcastle disease virus, prevented half the birds from dying; but 5 ml. injected three days before the administration of ten million lethal doses, prevented all infection.—F.A.A.

Asplin, F. D. (1952). **Immunisation against Newcastle disease with a virus of low virulence (strain F) and observations on subclinical infection in partially resistant fowls.**—*Vet. Rec.* **64,** 245-249. [Author's summary copied *verbatim.*] **3399**

Preliminary experiments with a strain of Newcastle disease virus of low pathogenicity (Strain F) are reported. Chickens inoculated intranasally with this virus either developed mild respiratory symptoms or failed to show symptoms. Chickens vaccinated when less than seven days old were immune for four to five months as judged by their failure to develop symptoms when challenged with virulent virus. Growing chickens or adults developed a more durable immunity.

Vaccine applied by wing web stab gave unreliable results. Most vaccinated fowls whose H.I. titres had fallen to 10 or less were found to excrete virus in their faeces for a period following challenge.

Virus was not re-isolated from fowls whose H.I. titre was 20 or higher at the time of challenge.

SCHJERNING-THIESEN, K. (1951). Forsøg med vaccination mod Newcastle disease. [**Vaccination against Newcastle disease using formolized adsorbed vaccine.**]—*Maanedsskr. Dyrlaeg.* **62**, 88-91. [English summary copied *verbatim.*] **3400**

An English strain of Newcastle disease virus was used in these experiments.

The experimental ND-vaccine (formolized aluminium hydroxide adsorbed) produced a rapidly developed immunity which was, however, of short duration. A high degree of immunity was noted ten days after vaccination and for a period of three months. Of greater interest is the fact that paresis of the legs and wings was demonstrated following exposure in place of the usual intestinal lesions produced by the English virus.

RUBIN, H., KISSLING, R. E., CHAMBERLAIN, R. W. & EIDSON, M. E. (1951). **Isolation of a psittacosis-like agent from the blood of snowy egrets.**—*Proc. Soc. exp. Biol., N.Y.* **78**, 696-698. [Authors' summary copied *verbatim.*] **3401**

A virus has been isolated from 2 snowy egrets [*Egretta candidissima candidissima*]. This virus has been identified by histological and serological tests as a member of the psittacosis-lymphogranuloma group. It closely resembles the Louisiana pneumonitis (Borg) virus in host range infectivity studies.

MORGAN, H. R. (1952). **Factors related to the growth of psittacosis virus (strain 6BC). I. Pteroylglutamic acid, vitamin B_{12}, and citrovorum factor. II. Purines, pyrimidines, and other components related to nucleic acid.**—*J. exp. Med.* **95**, 269-276 & 277-283. [Author's summaries copied *verbatim.*] **3402**

I. The inhibitory action of sodium sulfadiazine on the growth of psittacosis virus (6BC) in embryonated eggs is readily reversed by citrovorum factor but not by small amounts of vitamin B_{12}.

In embryonated eggs, the pteroylglutamic acid analogues, 9-methylpteroylglutamic acid and 4-aminopteroylaspartic acid, produced some suppression of the growth of psittacosis virus (6BC). 4-Aminopteroylglutamic acid, 4-amino-N^{10}-methylpteroylglutamic acid and 4-aminopteroylaspartic acid inhibited the growth of this virus in tissue cultures at concentrations which were not toxic for the host tissue. The inhibitory action of 4-amino-N^{10}-methylpteroylglutamic acid and 4-aminopteroylaspartic acid was readily overcome by addition of citrovorum factor.

Growth of meningopneumonitis virus in embryonated eggs or tissue culture is suppressed by 4-aminopteroylaspartic acid.

The advantages of the tissue culture technic for studies on the growth of viruses are discussed.

II. In various amounts and mixtures, adenine, guanine, xanthine, hypoxanthine, thymine, thymidine, cytidylic acid, and an enzymatic digest of desoxyribonucleic acid all failed to influence the inhibition by sulfadiazine of the growth of psittacosis virus (6BC) in embryonated eggs.

A number of purine analogues, including benzimidazole, 2,6-diaminopurine, and 8-azaguanine inhibited the growth of psittacosis virus (6BC) in tissue cultures at concentrations which had no obvious toxic effects on the host tissues. The virus inhibitory action of 2,6-diaminopurine was reversed by addition of adenine and that of 8-azaguanine by guanine.

The growth of psittacosis virus (6BC) was inhibited by the pteridine compounds 2-amino-4-hydroxy-6-formylpteridine and xanthopterin, while other related substances had little or no inhibitory activity. Xanthine reversed the inhibitory effects of 2-amino-4-hydroxy-6-formylpteridine. There was no correlation between the inhibitory activity of the pteridines on xanthine oxidase and multiplication of the virus.

DUNCAN, P. R., THOMAS, A. E. & TOBIN, J. O'H. (1952). **Ornithosis. Isolation of the virus from a case.**—*Lancet.* **262**, 696-697. [Authors' summary copied *verbatim.*] **3403**

Ornithosis infection in a poulterer is described. The methods used for isolation and identification of the virus are recorded. The serological evidence of infection is given.

EATON, M. D., LEVENSON, C. G. & PERRY, M. (1952). **Inhibition of the growth of viruses in the chick embryo by aromatic diamidines.**—*J. Immunol.* **68**, 1-9. [Authors' summary copied *verbatim.*] **3404**

Inhibitory effects of aromatic diamidines on the viruses of influenza, mumps, feline pneu-

monitis and meningopneumonitis in the allantoic sac of chick embryos are compared.

With pentamidine the order of activity may be stated as follows: feline pneumonitis> meningopneumonitis> mumps> influenza B> influenza A. Stilbamidine was inhibitory only to the mumps virus.

Growth of influenza viruses in de-embryonated allantoic sac preparations was slowed down by propamidine and pentamidine.

In mice the agents of feline pneumonitis and meningopneumonitis were inhibited to a slight degree, while results with influenza were negative.

KELLENBERGER, G. & KELLENBERGER, E. (1952). La lysogénie d'une souche Bacillus cereus. Mise en évidence par le microscope électronique. **[Electron microscope study of lysis of *B. cereus*.]**—*Schweiz. Z. allg. Path.* **15**, 225-233. [In French. English and German summaries. Authors' summary modified.] **3405**

A new method for the study of bacterial lysis with the electron microscope was described. Its chief advantage is that preparations can be made from cultures in liquid media without altering the physiological conditions. The method is therefore particularly suitable for the morphological study of metabolic processes such as the multiplication of bacteriophage. The method was applied to the study of a strain of *B. cereus* which was found to be lysogenic. Plaques resulting from the lysis of only 1 to 3 bacterial cells could be demonstrated, and it was shown that three separate types of phage are produced, all of which differ morphologically from most other known phages.

VAN DEN ENDE, M., DON, P. A., ELFORD, W. J., CHALLICE, C. E., DAWSON, I. M. & HOTCHIN, J. E. (1952). **The bacteriophages of *Pseudomonas aeruginosa*. Filtration measurements and electron microscopy.**—*J. Hyg., Camb.* **50**, 12-20. [Authors' summary slightly modified.] **3406**

Preliminary observations in a systematic study of 15 bacteriophages isolated from *Ps. pyocyanea* are described. The evidence as to size, morphology and plaque appearance indicates that this group of phages comprises several distinct types. The electron microscope reveals some of the phages to be simple spheres, but the majority are tailed particles.

The importance of this group in the study of the phenomenon of lysogenicity is pointed out.

FICK, J. F. & SCHUSS, J. (1952). **Heartwater immunisation under field conditions in Swaziland.**—*J. S. Afr. vet. med. Ass.* **23**, 9-14. [Authors' summary copied *verbatim*.] **3407**

Some aspects of heartwater immunisation of cattle under field conditions in Swaziland have been described. It has been shown that the incidence of deaths from heartwater in imported adult bulls can be reduced to a very low level by this method of immunisation.

LUOTO, L., WINN, J. F. & HUEBNER, R. J. (1952). **Q fever studies in Southern California. XIII. Vaccination of dairy cattle against Q fever.**—*Amer. J. Hyg.* **55**, 190-202. [Authors' summary modified.] **3408**

A pilot study to determine the effectiveness of a killed vaccine in preventing bovine infection with *Rickettsia burneti* was performed among adult dairy cattle which were replacements in 3 known infected dairies.

The occurrence of infection among cows that showed no evidence of infection at the beginning of the experiment was determined in 3 separate studies by two criteria: (a) the development of specific antibodies against *R. burneti* in the serum, and (b) the demonstration of *R. burneti* in the milk of such animals during 3 to 9 months of exposure in naturally infected dairy environs.

The high susceptibility of cows to Q fever and the occurrence of suitable exposure to the disease were demonstrated in that up to 50% of the cows constituting the control group showed evidence of infection.

The vaccine can be considered to have engendered some resistance to infection, as 3 times as many non-vaccinated as vaccinated cows gave serological evidence of infection and 5 times as many non-vaccinated as vaccinated cows shed *R. burneti* in their milk during the period of observation.

The study suggests the possibility of the use of vaccine to control Q fever in dairy cattle and the need for further research and field studies on this phase of the problem.

FONSECA, F., PINTO, M. R., COLAÇO, A. F., OLIVEIRA, J., BRANCO, F., DA GAMA, M. M., FRANCO, J. S. & LACERDA, M. T. (1951). Febre Q em Portugal. Epidemiologia da doença. **[Q fever in Portugal. The epidemiology of the disease.]**—*Rev. Clin. Contemporanea.* **5**, pp. 23. [Abst. in *Trop. Dis. Bull.* **48**, 980. (1951), copied *verbatim*. Signed: JOHN W. D. MEGAW.] **3409**

Q fever has been found to exist throughout Portugal; 48 human cases have been reported,

including four laboratory infections, and positive complement-fixation reactions have been found to occur in 23 per cent of the cows, in 20 per cent of the goats and in 27 per cent. of the sheep that have been tested in various provinces.

Rickettsiae have been isolated from ticks attached to a cow and from others found on pigs. Experimental transmission of infection to sheep was carried out by the bite of *Hyalomma rufipes glabrata* which had been infected in the larval stage by feeding on infected guineapigs.

Guineapigs were readily infected by swallowing spleen suspensions of infected mice or yolk-sac cultures of the organism. Monkeys were also infected by feeding them on milk of artificially infected sheep mentioned above.

The authors believe that most of the cases of human infection resulted from drinking infected milk, and they regard the tick as being essential for the maintenance of infection among the animal reservoirs.

The paper contains an excellent summary of the history of Q fever; long quotations are given from papers by Derrick and other pioneers in research work on the subject.

Fonseca, F. & Pinto, M. R. (1951). Valor das epizootias nas epidemias das ríckettsioses. **[The significance of epizootics in connexion with epidemics of rickettsial diseases.]**—*Gaz. Méd. portug.* **4,** 536-542. [English summary.] [Abst. in *Trop. Dis. Bull.* **49,** 258. (1952), copied *verbatim*. Signed: John W. D. Megaw.] **3410**

A study of the rickettsial fevers in Portugal has led the authors to the not surprising conclusion that the prevalence in man of Q fever, murine typhus and boutonneuse fever depends entirely on the occurrence of these diseases among lower animals and that human infection is purely a secondary occurrence, playing little or no part in the maintenance of infection.

Q fever is stated to be widely disseminated among cattle, goats and sheep in Portugal; after a peak period of incidence in 1948-49 the disease in man has been declining so that only 3 cases have been reported in 1951. The decline is attributed to immunity acquired by the offspring of infected animals, either *in utero* or by drinking the mothers' milk. Experiments in guineapigs, now described, show that such immunity is actually produced.

Monaci, V. (1951). Sulla frequenza di anticorpi contro la R. burneti in soggetti ad alcuni servizi pubblici. **[Incidence of Q fever antibodies in employees of public services.]**—*Boll. Ist. sieroter., Milano.* **30,** 599-603 [Abst. from English summary.] **3411**

Complement-fixing antibodies were present in 23·6% of 275 workers in public abattoirs; in 5·7% of 208 workers in the central dairies and in 10·6% of 188 workers in the street-cleansing departments, of Milan, Brescia and Varese. They were present in only 0·9% of 225 control subjects resident in Milan and having no contact with cattle or their raw products.

Herzberg, K. (1950). Epidemiologie der Virusgrippe und der Viruspneumonie (Q-Fieber). **[Epidemiology of Q fever.]** Proc. 3rd Convention of German Hygienists and Microbiologists 6th-9th Sept. 1949. Frankfurt.—*Zbl. Bakt. I.* (*Orig.*) **155,** 177-196 of Proceedings. **3412**

Knowledge of the epidemiology of Q fever was reviewed and summarized.—W. R. Bett.

Wiesmann, E. (1952). Die Q-fever-Forschung in der Schweiz in der Jahren 1947-1951. **[Q fever research in Switzerland during 1947-1951.]**—*Z. Tropenmed. u. Parasit.* **3,** 297-301. [Abst. from English summary.] **3413**

Q fever is endemic throughout Switzerland and in contiguous territories. At the St. Gallen Institute of Bacteriology 1,080 human infections had been diagnosed serologically; a large number of cases were found also in Zurich.

As in other countries, epidemics in Switzerland could always be traced to domestic animals (cattle, sheep and goats) and their products. A Q-fever outbreak in the Engadin Valley in 1950 was accompanied by infectious abortions among sheep.

Stoker, M. G. P. & Marmion, B. P. (1952). **Detection of Q fever antibodies in whey by the anti-globulin sensitization test and other techniques.** — *J. Hyg., Camb.* **50,** 1-11. [Authors' summary copied *verbatim*.] **3414**

Samples of whey from individual cows and herds infected with *R. burneti* and from uninfected cows and herds have been tested for *R. burneti* antibodies. The haemolytic complement-fixation test, the conglutinating complement-absorption test, the direct agglutination test and the anti-globulin sensitization test were compared for sensitivity in detecting whey antibody. The direct agglutination test was generally more sensitive than either of the complement-fixation tests, particularly when it was enhanced by centrifugation of the sensitized rickettsiae. The anti-globulin sensitization test, however, gave the highest titres and it appeared to be specific.

The practical application of these tech-

niques and certain theoretical considerations are discussed.

LENNETTE, E. H., CLARK, W. H., ABINANTI, M. M., BRUNETTI, O. & COVERT, J. M. (1952). **Q fever studies. XIII. The effect of pasteurization on *Coxiella burneti* in naturally infected milk.**—*Amer. J. Hyg.* **55**, 246-253. [Abst. from authors' summary.] **3415**

The effect of pasteurization on the survival of *Rickettsia burneti* was investigated. Pasteurization was carried out in commercial processing plants under the usual, routine operating conditions. In one of 35 instances, the organism survived pasteurization by the vat holding method; in this instance, however, pasteurization, as judged by the phosphatase test, may not have been complete. In two instances out of 42 the organisms were detected in milk pasteurized by the high-temperature-short time method.

Further work on the thermal death point of *R. burneti*, and its application to pasteurization procedures, is indicated.

The authors referred in an *Addendum* to the work of Marmion *et al.* [*V.B.* **22**, 431].

LENNETTE, E. H., HOLMES, M. A. & ABINANTI, F. R. (1952). **Q fever studies. XIV. Observations on the pathogenesis of the experimental infection induced in sheep by the intravenous route.**—*Amer. J. Hyg.* **55**, 254-267. [Authors' summary modified.] **3416**

In orientative studies on the pathogenesis of Q fever in sheep, 8 animals were inoculated intravenously with graded amounts of *Rickettsia burneti*.

Evidence of infection, such as fever, rickettsaemia, development of specific antibodies and the recovery of the organisms from the tissues, was obtained in these animals.

The possible occurrence of long-continued, latent infections is suggested by the persistence of the rickettsia in the tissues for at least 43 days, which represented the duration of the experiment reported here.

Gross and microscopic pathological changes were observed in the tissues of the inoculated sheep; the significance of these changes could not be unequivocally interpreted.

Except for 3 isolated instances, the presence of the organism in mammary gland secretions, urine, faeces and oral and nasal secretions, was not demonstrable. It should not be concluded that excretion of the rickettsia from the infected host is not a part of the disease process as it occurs in nature. The influence of such factors as other routes of inoculation and physiological changes in the infected host must be considered, and will be evaluated in future studies.

GILLESPIE, J. H. & BAKER, J. A. (1952). **Experimental Q fever in cats.**—*Amer. J. vet. Res.* **13**, 91-94. [Authors' summary modified.] **3417**

Infection of cats with *Rickettsia burneti* has been produced by subcutaneous inoculation, by feeding, and by contact exposure. Most cats inoculated subcutaneously developed fever, lack of appetite, and lethargy that began two days after inoculation and lasted for three days, while animals infected by other routes developed no signs of illness. The organism was present in the blood of some cats for one month following inoculation and for two months in the urine. With one exception, complement-fixing antibodies or agglutinins were demonstrated in sera from infected cats. This ability of *R. burneti* to infect cats suggests that they may be a factor in the spread of Q fever.

ORMSBEE, R. A. (1952). **The growth of *Coxiella burnetii* in embryonated eggs.**—*J. Bact.* **63**, 73 - 86. [Author's summary modified.] **3418**

Some of the characteristics in the growth of *Rickettsia burneti* in embryonated eggs were described. The growth curve of *R. burneti* in the living chick yolk sac exhibits, in terms of the complement-fixation test, a lag phase and a period of exponential growth, but no sharp point of maximum concentration, nor a stationary phase. When chick embryos are infected with *R. burneti* via the yolk sac, the infection appears to be wholly confined to the yolk sac and not to spread to other embryonic tissues. The growth rate of the chick embryo yolk sac is not greatly affected by a *R. burneti* infection which is acutely lethal to the embryos. No evidence was found for the growth of *R. burneti* in the tissues of dead embryos. The total number of rickettsia in a population of living chick embryos is characterized, in the case of *R. burneti*, by a rapid approach to a maximum, closely folowed by a rapid decline. This phenomenon is important to the problem of securing maximum rickettsial yield by yolk sac technique.

KIRBERGER, E. (1951). Die Resistenz der *Coxiella burneti in vitro*. **[Resistance of *Rickettsia burneti in vitro*.]**—*Z. Tropenmed. u. Parasit.* **3**, 77-86. [Abst. from English summary.] **3419**

R. burneti is destroyed by heat at 65°C.

in 15 min. and by alcohol (70%) and ether in 1–2 min. Ultrasonic waves, ultra-violet rays, Zephyrol, aureomycin and chloromycetin did not impede the growth of *R. burneti*.

K. considers that in view of its biotic properties (filtrability, lack of affinity to *Proteus*, and its high resistance) *R. burneti* deserves a separate place within the group of rickettsia or viruses.

GREIFF, D. & PINKERTON, H. (1951). **Rickettsiostasis in fertile eggs from use of antibiotic residues in poultry feeds.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 690-692. [Authors' conclusions copied *verbatim*.] **3420**

The introduction of antibiotic mash containing aureomycin and terramycin, into the diet of a flock of laying hens, resulted in progressively increasing resistance of the eggs to rickettsial growth, the resistance becoming almost complete at the end of 3 weeks. Similar dietary factors had no appreciable effect on the growth of influenza A virus in eggs. These results, with other data submitted, indicate that fertile eggs obtained from commercial hatcheries, may, under present conditions, be unsatisfactory for controlled microbiological studies.

WEYER, F. (1950). Die Entwicklung von Rickettsien in den Larven vom Mehlkäfer (Tenebrio molitor L.). **[Development of *Rickettsia* in larvae of the meal worm *T. molitor*.]** —*Schweiz. Z. allg. Path.* **13,** 478-486. [English, French and Italian summaries. Abst. from English summary.] **3421**

The larva of *T. molitor* is susceptible to infection with *R. mooseri, R. prowazeki* and *R. burneti*, when inoculated into the coelomic cavity. No change of virulence for mice and lice is observed after passage through meal-worms. Multiplication of the rickettsia in the meal-worm takes place especially in non-differentiated cells and in young fat cells and large numbers are seen in phagocytes. The abundant growth of *R. burneti* killed the larvae about a week after inoculation. No growth of extracellular rickettsia was observed.

DICK, G. W. A. (1952). **Further studies on the susceptibility of African wild animals to yellow fever.**—*Trans. R. Soc. trop. Med. Hyg.* **46,** 47-58. [Author's summary modified.] **3422**

Further studies were presented on the susceptibility to yellow fever virus of African wild mammals. It was confirmed that hedgehogs are highly susceptible to inoculations of yellow fever virus. The other insectivores studied, the shrews, were found to be resistant to inoculations of viscerotropic virus. Of all the other animals tested, only in genets (viverrids, *Genetta*) did virus circulate in a quantity which it was believed might infect an arthropod vector.

Some palm civets which developed antibody after inoculation lost all demonstrable antibody after various intervals. This phenomenon was observed only in those palm civets in which no circulating virus was found. The results of some neutralization tests on the sera of wild animals other than anthropoids and rodents were summarized.

PHILIP, C. B. (1952). **Tick transmission of Indian tick typhus and some related rickettsioses.**—*Exp. Parasitol.* **1,** 129-142. [Authors' summary slightly modified.] **3423**

Experiments in progress have shown that a strain of tick typhus recovered from *R. sanguineus* from Kashmir, India, is transmissible to guinea pigs by the bites of larvae, nymphs, and adults of that same species of tick infected in previous stages, though some of the test animals showed mild or inapparent infections as checked by challenge with virulent material. Under similar donor conditions and conditions under which infection with Rocky Mountain spotted fever would have been expected, *D. andersoni* failed to become infected. This is comparable to some experience in tests of tick transmission of fièvre boutonneuse strains from the Mediterranean area and of a tick-bite fever strain from South Africa.

R. sanguineus infected with the agent of fièvre boutonneuse is infectious in all active stages when injected in the unfed or fasting condition into guinea pigs or persons. This is in contrast to *D. andersoni* infected with Rocky Mountain spotted fever which is reported to require a period of incubation or feeding on a host to "reactivate" the virulence of the infectious agent acquired in a previous stage.

See also abstr. **3494** ("hard pad" disease); **3568** (report, Colonial Development Corporation); **3569-3570** (reports, Union of South Africa); **3571** (report, Southern Rhodesia); **3573** (report, Jamaica); **3574**; (report, British Honduras); **3576** (report, Indonesia).

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BLOMFIELD, A. M. (1952). **The conglutination phenomenon. VIII. A quantitative study of the components in six different complements essential for conglutination.**—*J. Hyg., Camb.* **50,** 126-135. [Author's summary copied *verbatim.*] 3424

A quantitative study has been made of the activity of C′1, C′2 and C′4 in the complements of the horse, cat, pig, man, guinea-pig and rabbit. Evidence is presented which suggests that either there may be two types of C′4, the one haemolytic and the other conglutinating, or else that the manifestation of this complement varies under conditions not yet understood. In certain complements it appears that the serum proteins functioning as C′1, with the bovine anti-sheep red cell antibody are distinct from those functioning as C′1 with an antibody of similar specificity from an immune rabbit serum.

MICHELAZZI, L. (1951). Sopra la estrazione degli anticorpi specifici dai nuclei e mitocondri separati da organi di animali immuni. **[Extraction of specific antibodies from nuclei and mitochondria of organs from immune animals.]**—*Boll. Ist. sieroter., Milano.* **30,** 105-112. [Abst. from English summary.] 3425

By separation of nuclei and mitochondria from the liver and kidneys of rabbits immunized against different antigens it is possible to extract specific antibodies. When nuclei and mitochondria were extracted 24 hours after administration of the antigen M. found that antibodies were present in the nuclei only, not in serum or in mitochondria; after eight hours antibodies appeared also in the serum and mitochondria. From these findings it was concluded that the first stage of immunity occurs in the nucleus.

SCHWARZWEISS, H. & TOMCSIK, J. (1950). Über die Flockung der alkoholischen Extrakte aus Schaf- und Rinder-Erythrocyten-Stromata mit verschiedenen Antikörpern. **[Flocculation of alcohol-extracts of sheep and cattle erythrocytes with various antibodies.]**—*Schweiz. Z. allg. Path.* **13,** 439-447. [English, French and Italian summaries. English summary modified.] 3426

Alcoholic extracts of sheep cells show flocculation with rabbit antisheep cell sera. The flocculation is brought about by the interaction between Forssmann antigen and Forssman antibody. Alcoholic extracts of cattle red cells react with sera from cases of human serum-sickness. The haemagglutinin of infectious mononucleosis does not flocculate with the purified antigen from cattle cells, although the latter is very active, with respect to the inhibition of the mononucleosis haemagglutinin.

RICE, C. E. & BOULANGER, P. (1952). **The interchangeability of the complement components of different animal species. IV. In the hemolysis of rabbit erythrocytes sensitized with sheep antibody.**—*J. Immunol.* **68,** 197-205. [Authors' summary copied *verbatim.*] 3427

Horse, cow, and sheep complements, all three of which are "non-hemolytic" for sheep red cells sensitized with specific rabbit antiserum, were found to be hemolytic for rabbit red cells, either untreated or sensitized with specific sheep antiserum. Hence, a sensitized rabbit-red-cell suspension was used as the indicator in the titration of complement in fresh sera of these three species. The titers obtained differed significantly from these determined with the "standard" hemolytic indicator or by conglutination.

Dialysis in the cold in phosphate buffer of pH 5·4 and ionic strength 0·02, separated these complements into insoluble and soluble fractions that were inactive alone but which on admixture showed hemolytic properties for sensitized rabbit-red-cells. Treatment with zymosan or hydrazine in suitable amounts inactivated each of these complements; the hemolytic activity was restored by the addition of heated serum of the same and of certain other species.

Titrations of hemolytic activity for sensitized rabbit-red-cells suggest therefore that the complements of the horse, sheep, and cow, like those of the other complements previously studied, consist of a complex of four major components, which it seems reasonable to designate as C′1, C′2, C′3 and C′4, although, owing to some species incompatibility they may not always prove mutually interchangeable with the corresponding complement components of the guinea-pig or other animals.

TOMCSIK, J. & SCHWARZWEISS, H. (1950). Über die Antigenstruktur der Schaf- und Rinder-Erythrocyten. **[Antigenic structure of sheep and cattle erythrocytes.]**—*Schweiz. Z. allg. Path.* **13,** 447-455. [English, French and

Italian summaries. English summary modified.] 3428

From the stroma of cattle red cells two chemically distinct thermolabile antigens were obtained. One of them reacts specifically with sera of cases of infectious mononucleosis, the other with sera from patients with horse-serum sickness. Both antigens are present in sheep cells which in addition contain the Forssman antigen. The thermolabile antigens of cattle and sheep cells are proteins. Each of them contains a species specific fraction and a fraction shared by both.

HAMILTON-PATERSON, J. L. & HENDERSON, W. G. (1952). **Serum nephritis in rabbits.**—*Brit. J. exp. Path.* **33**, 67-75. [Authors' summary copied *verbatim.*] 3429

A glomerulotubal nephritis induced in rabbits with horse serum is described. The relation of the type of sensitivity and the onset of nephritis is discussed. It is suggested that this type of experimental nephritis is a manifestation of periarteritis nodosa, and is identical with a similar form of the disease occurring in man.

INNES, J. R. M. (1951). **Experimental 'allergic' encephalitis: attempts to produce the disease in sheep and goats.**—*J. comp. Path.* **61**, 241-250. [Author's summary slightly modified.] 3430

In eight goats, the injection of an emulsion of normal sheep brain with adjuvants did not produce an encephalitis.

In sheep, the same brain emulsions as used for the goats produced a characteristic neurological syndrome in 4 out of 8 adult animals and in 6 out of 9 lambs. Noteworthy clinical features included the long latent periods elapsing between injection and the onset of symptoms, the acute course in some animals, possible recovery in a few "negative animals", and a relapsing disease in at least one positive case.

The lesions of ovine allergic encephalitis have some similarity to those seen in other species but acute haemorrhagic changes were not encountered. Areas of myelin rarefaction were occasionally found but selective perivascular, punched out or diffuse foci of myelinoclasis were not observed—such as is seen in experimental allergic encephalitis in monkeys and in the natural variety of simian Schilders-like disease.

The disease does not resemble any type of naturally occurring encephalitis so far identified in a ruminant.

Sheep might be used with advantage in future attempts to produce an artificial counterpart of human disseminated sclerosis.

MERCHANT, D. J. & CHAMBERLAIN, R. E. (1952). **A phagocytosis inhibition test in infection hypersensitivity.**—*Proc. Soc. exp. Biol., N.Y.* **80**, 69-71. [Authors' summary copied *verbatim.*] 3431

A phagocytosis inhibition test is described for infection hypersensitivity. It is similar to the leukocytolysis reaction and to studies of cell damage in tissue culture in that it is not readily demonstrated in hypersensitivity to egg albumin. The test is simple to perform and can be carried out very rapidly. These features, along with its specificity, make it a useful procedure for the *in vitro* evaluation of allergy.

HERXHEIMER, H. (1952). **Repeatable 'microshocks' of constant strength in guinea-pig anaphylaxis.** — *J. Physiol.* **117**, 251-255. [Author's summary copied *verbatim.*] 3432

In guinea-pigs sensitized to egg albumen mild shock is produced by inhalation of antigen aerosol. By ending the exposure just before the convulsion stage fatal shock is avoided. The period of exposure to the antigen aerosol is termed the preconvulsion time. If the animal is gradually desensitized by rapidly repeated exposures, the preconvulsion time becomes longer. If the time between exposures is increased, the preconvulsion time becomes shorter because resensitization takes place. For each animal an interval between exposures can be found after which the preconvulsion time remains approximately constant. The method has been found useful for testing quantitatively the action of substances counteracting or enhancing anaphylactic shock.

MAKINODAN, T., WOLFE, H. R., GOODMAN, M. & RUTH, R. (1952). **Precipitin production in chickens. VII. The relation between circulating antibody and anaphylactic shock.**—*J. Immunol.* **68**, 219-226. [Authors' summary slightly modified.] 3433

Three to six month old chickens were shown to be excellent subjects for studies of active anaphylaxis. Anaphylactic shock was best obtained on the 6th, 7th, or 8th day following sensitization, and was best avoided by reinjection before the 4th day or after the 15th day. The optimal amounts of sensitizing antigen were 40 to 120 mg. protein in animals of about 1500 g.; optimal amounts of challenging

antigen were 10 to 40 mg. protein. A challenging injection of 5 mg. was not satisfactory. The frequency of shock increased as the antibody content per ml. increased and as the ratio of the antibody content per ml. to the amount of challenging antigen increased. No variations in anaphylactic response clearly due to sex or breed were observed.

See also absts. **3252** (influence of *Br. abortus* suspensions on immunity produced by staphylococcal anatoxin); **3258** (agglutination test in TB. of fowls); **3274** (antigenic properties of *E. rhusiopathiae* strains); **3279** (pullorum disease); **3288-3289** (*Brucella* agglutination); **3290** (Strain 19); **3292** (complement-fixation test for bovine leptospirosis); **3297** (vaccine against *L. icterohaemorrhagiae* infection in dogs); **3316** (cold-agglutinins in trypanosomiasis and malaria); **3317-3318** (trichomoniasis); **3330** (complement-fixation test for toxoplasmosis); **3332** (Sabin-Feldman test in sarcosporidiosis); **3337-3358** (F. & M. disease); **3364** (fowl pox); **3366** (swine influenza); **3372** (response of monkeys to poliomyelitis virus after injections with Newcastle disease virus); **3374** (agglutination reactions in equine encephalomyelitis); **3375** (immunization of laboratory workers with equine encepalomyelitis vaccine); **3376** (diagnosis of equine infectious anaemia by allergic reactions); **3380-3381** (lapinized rinderpest vaccine); **3384** (enzootic abortion in ewes); **3389-3391** (fox encephalitis); **3398-3400** (Newcastle disease); **3407** (heartwater); **3408, 3411** and **3414** (Q fever); **3576** (report, Indonesia); **3577** (book, antibodies and embryos).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

PRISELKOVA, D. O. (1951). **[Influence of atmospheric conditions and acaricides on ticks infesting horses.]**—*Veterinariya, Moscow.* **28,** No. 3 pp. 27-33. 3434

Observations were made on the influence of temperature and humidity on the development and viability of ticks; on the influence of type of pasture; and on a number of acaricidal preparations.

In stables at temperatures of 6°–8°C. and humidity 85–96%, ticks retained their capacity for movement up to 46 days and signs of life to 60 days; at lower temperatures and humidity their viability was proportionately reduced. Outdoors in wet weather—range of diurnal temperature 12°–23°C. and humidity 83–100% —capacity to move about lasted up to 29 days and signs of life up to 45 days, but only up to 21 and 33 days respectively in dry weather with temperatures 18°–33°C. and day air humidity 56–67%. It was found that the greater the temperature variations and the oftener this occurred, the greater was the mortality. First and second stage larvae were the most resistant to both weather and insecticides.

—F.A.A.

ARNOLD, R. M. (1952). **Laboratory assessment of tick-killing agents.**—*Vet. Rec.* **64,** 426-429. [Author's summary modified.] 3435

An *in vitro* test for susceptibility of *B. annulatus* to benzene hexachloride was described and the appearance of resistant strains of this tick in various parts of Jamaica was recorded. The value of the *in vitro* test was discussed in relation to its value in field investigation of dipping problems.

LEES, A. D. (1952). **Aspects of the physiology of the sheep tick.**—*Ann. appl. Biol.* **39,** 146-148. 3436

L. pointed out that while questing for hosts in the upper vegetation, unfed desiccated *Ixodes ricinus* is capable of taking up water through the cuticle and that the speed with which the fat reserves are used up in newly moulted ticks during periods of activity restricts their active life to four weeks and prevents the life cycle of spring fed ticks from extending beyond three years.—M. J. LETHBRIDGE.

MILNE, A. (1952). **Features of the ecology and control of the sheep tick, *Ixodes ricinus* L., in Britain.** — *Ann. appl. Biol.* **39,** 144-146. 3437

M. considered that a rough bent pasture provides at its base a microatmosphere bordering on saturation for the inactive tick. During periods of activity of 2–3 days three or four times in a month the tick ascends the grass stems and is able to withstand a relative humidity of 40–80%. Even at a maximum density of one sheep per acre only one third of female ticks are fed.—M. J. LETHBRIDGE.

KITTRELL, B. M. (1951). **Tick paralysis. Report of a case.**—*J. Amer. med. Ass.* **147,** 1561-1562. [Author's summary copied *verbatim.*] 3438

Although tick infestation is known to be widespread, few cases of tick paralysis have been reported. Since most textbooks mention only that such a syndrome is known to occur, and since so few cases have been reported in the current literature, it seems likely that many cases may be overlooked.

SCHMIDT, H. W. (1949). Hunde als Überträger der Sarkoptesräude auf andere Haustiere und den Menschen. **[Dogs as transmitters of sarcoptic mange to other domestic animals and man.]**—*Z. Haut- u. Geschlechtskr.* **6,** 206. 3439

Dogs used for hunting and retrieving often act as transmitters of sarcoptic mange from foxes and badgers to domestic animals and man. S. discussed precautions in the presence of epidemics among badgers and foxes.

—W. R. BETT.

GAMBLES, R. M. (1952). ***Myocoptes musculinus* (Koch) and *Myobia musculi* (Schranck), two species of mite commonly parasitising the laboratory mouse.**—*Brit vet. J.* **108,** 194-203. [Author's summary slightly modified.] **3440**

Two fur-frequenting mites of the mouse, *Myocoptes* and *Myobia,* were described and illustrated in figures in both the adult and immature stages. *Myocoptes* is capable of setting up symptoms of mange in the laboratory white mouse when the normal host-parasite relation is upset.

See also absts. **3325** (*D. marginatus*); **3327** (tick-transmitted canine babesiasis); **3328** (East Coast fever); **3329** (*Hyalomma*); **3331** (arthropods transmitting *T. gondii*); **3363** (*H. suis* transmitting swine pox); **3423** (tick typhus); **3572** (report, East Africa High Commission).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

KRULL, W. H. & MAPES, C. R. (1952). **Studies on the biology of *Dicrocoelium dendriticum* (Rudolphi, 1819) Looss, 1899 (Trematoda: Dicrocoeliidae), including its relation to the intermediate host, *Cionella lubrica* (Müller). III. Observations on the slimeballs of *Dicrocoelium dendriticum*.**—*Cornell Vet.* **42,** 253-276. [Abst. from authors' summary.] **3441**

It has been found that the slimeball is a stage in the life cycle of *D. dendriticum,* in the U.S.A. Slimeballs obtained from the snail, *Cionella lubrica,* are masses of cercariae in a matrix surrounded by a layer of clear, gelatinous material variable in thickness; they are smaller than the slimeballs produced by European snails.

The phenomena associated with the production of slimeballs are not completely understood, but their formation appears to be associated with a drop in the temperature in the environment of the snail. *C. lubrica* may produce up to five slimeballs in 23 days.

Slimeballs are produced in at least two ways, by expulsion of a fully formed slimeball from the respiratory pore, or by the use of the surface slime of the snail, in which the cercariae accumulate gradually.

NOSIK, A. F. (1951. **[The value of birds in the control of liver fluke snails.]**—*Veterinariya, Moscow.* **28,** No. 4. pp. 16-19 **3442**

An account of the value of ducks and other poultry on a farm in controlling liver fluke by eating the snails.—F.A.A.

BUTTNER, A. (1951). La progénèse chez les trématodes digénétiques. **[Progenesis in digenetic trematodes.]**—*Ann. Parasit. hum. comp.* **26,** 19-66, 138-189 & 279-322. **3443**

In this detailed study, B. described techniques for studying progenesis (precocious development whereby metacercariae, often still encysted, reach the stage of egg-production). *Paralepoderma* (*Plagiorchis*) *brumpti* n.sp. was established in the intermediate host, the tadpole of *Alytes obstetricans,* by the administration of eggs taken from metacercariae. Progenesis is probably mainly hereditary, although environmental factors have some influence on it. In obligatory progenesis with massive production of eggs, a definitive host is probably not necessary. The normal life-cycle and the progenetic one co-exist in the same parasite.

The genetical implications of progenesis and its possible bearing on the origins of parasitism in the Trematoda, were discussed.

—JAS. G. O'SULLIVAN.

BERGEON, P. (1951-52). Fréquence du parasitisme à *Schistosoma spindale* chez les buffles indochinois. [***Schistosoma spindalis* in buffaloes in Indo-China.**]—*Rev. Élev.* **5,** 52. **3444**

Twelve buffaloes in Indo-China, taken at random from a herd of 50, were all affected with *S. spindalis* but none with *S. bovis.* The majority of the parasites were in the mesentery.

—JAS. G. O'SULLIVAN.

DURIE, P. H. (1951). **The paramphistomes (Trematoda) of Australian ruminants. I. Systematics.**—*Proc. Linn. Soc. N.S.W.* **76,** 41-48. [Abst. from author's summary.] **3445**

A study has been made of the species of paramphistomes occurring in the rumen and reticulum of Australian cattle.

The species previously known as *Paramphistomum cervi,* was found to consist of *Ceylonocotyle streptocoelium* (Fischoeder, 1901) Näsmark, 1937, and *Calicophoron calicophorum* (Fischoeder, 1901) Näsmark, 1937, whilst that previously known as *P. cotylophorum* was determined as *P. ichikawai* Fukui, 1922. A fourth species was present among the material examined but as yet remains undetermined.

RAUST, R. (1952). Cysticercose du veau. **[Cysticercosis in calves.]**—*Bull. Acad. vét. Fr.* **25,** 113-115. **3446**

Of 1,309 calves slaughtered at Rouen abattoir, cysterci were present in nine. In all

cases, which were in prime condition, cysts were degenerating and involved heart muscle.
—M. L. Clarke.

Andrews, J. S., Southwell, B. L. & Jones, D. J. (1952). **Acquisition of parasites by swine hogging-off crops.**—*Circ. Ga. cst. Plain. Exp. Sta.* No. 21. pp. 11. 3447

Spring pigs farrowed on cultivated land and grazed on mature crops during the summer, were observed for seven years. The area occupied by the pigs after weaning was free from parasites prior to the experiment.

Strongyloides, Oesophagostomum spp., *Hyostrongylus, Ascarops* and the larvae of *Ascaris* and *Stephanurus* in the liver were present in largest numbers but *Trichuris, Metastrongylus, Macracanthorhynchus,* and adult *Ascaris* and *Stephanurus* were apparently controlled by this method of husbandry. Clinical parasitism was not observed in any of the pigs. A well-drained area, not previously contaminated, might be used with safety for four years.
—Jas. G. O'Sullivan.

Magath, T. B. & Thompson, J. H., Jr. (1952). **Diethylcarbamazine (hetrazan) in experimental trichinosis.**—*Amer. J. trop. Med. Hyg.* **1,** 307-313. [Authors' summary copied *verbatim.*] 3448

Large and excessive doses of diethylcarbamazine (Hetrazan), given under the conditions of the experiments described, did not affect the course of experimental trichinosis in the rat nor was there evidence that, in this animal, the drug had any demonstrable effect *in vivo* on the adults or on the larvae, migrating or encysted, of *Trichinella spiralis.*

Soliman, K. N. (1952). **Observations on the survival on pasture of preparasitic stages of *Dictyocaulus viviparus* in Southern England. I.**—*Brit. vet. J.* **108,** 167-172. [Abst. from author's summary.] 3449

In observations from Oct. 1950 to Feb. 1951, four susceptible cattle failed to contract lungworm infestation when allowed to graze a naturally-infested pasture two months after it had been vacated by the infested cattle. *Haemonchus contortus,* which was recovered P.M. from three animals of the original herd that were grazing the same site, also failed to become established in the experimental animals under the same conditions. *Trichuris ovis* was able to reproduce itself as shown by the presence of its ova in the faeces of these animals after 40 days' grazing on the experimental pastures.

It would seem advantageous if a system of rotational grazing could be adopted where animals do not remain more than seven days on the strip grazed (*i.e.,* the time known for first-stage larvae to develop to the third stage). Furthermore, the same strip should not be grazed again before the lapse of at least two months.

Gregoire, C. (1951). Bronchite vermineuse des bovidés. Epidémiologie; son incidence sur le traitement. [**Parasitic bronchitis in cattle, epidemiology and treatment.**]—*Ann. Méd. Vét.* **95,** 481-490. 3450

Mainly a commentary on the work of Wetzel [*V.B.* **21,** 2629] who claimed that *Dictyocaulus viviparus* depends for its continued existence on carrier animals and not on larvae overwintering on the pasture. Aspects of immunity in young and old animals were considered. G. proposed a regimen of intratracheal injections using benzene hexachloride.—Jas. G. O'Sullivan.

Deschiens, R. & Poirier, M. (1947). Données relatives à l'intoxication vermineuse expérimentale. [**Data relating to toxins of worms.**] —*C.R. Acad. Sci., Paris.* **224,** 689-690. 3451

G. pigs injected with trichloracetic acid extracts of *Ascaris megalocephala* and *A. lumbricoides* developed symptoms and lesions similar to those of acute histamine intoxication. Prior injection of synthetic anti-histaminics afforded protection against the condition, but the action of the extracts on isolated g. pig intestine failed to confirm the presence of histamine. It was concluded that a substance closely allied to histamine was present in the extracts.
—K. B. Sinclair.

Mendheim, H., Scheid, G. & Schmidt, J. (1952). Die selteneren Spulwurminfektionen beim Menschen. [**Infestation in man with less commonly recorded ascaris worms.**]—*Z. Tropenmed. u. Parasit.* **3,** 368-371. [Abst. from English summary.] 3452

Literature on ascaris infestation in man was reviewed. The cat ascaris (*Toxocara mystax*) was recorded 18 times, the "leopard" ascaris (*Lagochilascaris minor*) five times. Only one certain case of dog ascaris infestation (*T. canis*) had been recorded. One case of calf ascaris (*Ascaris vitulorum*) infestation was doubtful. The authors described a case of *T. canis* infestation they had seen in Munich in 1948. The less commonly seen ascaris worms are often mistaken for young or male specimens of *A. lumbricoides,* hence the small numbers reported.

Schmidt, J. & Leidl, W. (1951). Fermentative Behandlung der Askaridosis bei Hunden und Katzen. [**Treatment of ascaris infestation in dogs and cats with proteolytic ferments.**]—*Mh. VetMed.* **6,** 185-186. 3453

Thirteen dogs and one cat with ascaris infestations were given *per os* 0·5 g. or 1 g. per kg. of a 0·25% solution of "nematolyt", said to be a keratinolytic ferment, which attacked the integument of the worm rendering it defenceless to intestinal action. Three weeks later *Ascaris* eggs were absent from all except one of the dogs.—R. D. Carty.

Gibson, C. L. (1952). **Comparative morphology of the skin-inhabiting microfilariae of man, cattle, and equines in Guatemala.**—*Amer. J. trop. Med. Hyg.* **1,** 250-262. [Author's summary modified.] 3454

Human beings, cattle, and horses in the onchocerciasis zone of Guatemala are infected with microfilariae which inhabit the dermal layer of the skin and do not circulate in the blood. These microfilariae belong to the species *Onchocerca volvulus, O. gutturosa,* and *O. reticulata* (=*O. cervicalis* Railliet and Henry, 1910), respectively.

The microfilariae of these three species can be distinguished morphologically on the basis of the form, size and arrangement of the caudal nuclei.

See also absts. **3457** (leiomyoma following *H. gallinae* infestation); **3569** (report, Union of South Africa); **3573** (report, Jamaica); **3576** (report, Indonesia).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Ohbayashi, M. & Haga, M. (1951). [**Primary adrenal tumours of domestic animals.**]—*Jap. J. vet. Sci.* **13,** 69-78. [English summary.] 3455

Primary adrenal tumours in two Holstein-Friesian cows and a stallion were described. A 15-year-old cow had a pear-shaped sarcomatous tumour with a carcinomatous area, weighing 430 g. which was enveloped by a thin fibrous capsule. A similar tumour weighing 2150 g. was also observed in an 8-year-old cow. The tumours were diagnosed as "hypernephroma corticale sarcomatodes". A phaochromocytoma in a 13-year-old stallion had an alveolar structure composed of a stroma consisting of a network of blood capillaries with tumour cell groups in the lumina.—Kogi Saito.

Vaccari, I. (1949). Sindrome emiparetica spastica totale da oligodendroglioma del ponte di varolio, in un cane. [**The hemiparetic spastic syndrome of an oligodendroglioma of the pons varolii in a dog.**]—*Nuova Vet.* **25,** 193-199 & 253-263. 3456

An account of the disease in an eight-year-old dog with an oligodendroglioma of the pons varolii. There was a one-sided paralysis.

—M. Bertani.

Krahnert, R. (1952). Sarkoides Leiomyom nach Heterakidenbefall. [**Leiomyoma of the caecum in a pheasant following *Heterakis gallinae* infestation.**]—*Mh. VetMed.* **7,** 71-75. 3457

K. reviewed the literature on tumour formation associated with helminth infestation in animals, and described the pathology of a leiomyoma of both caeca in a pheasant heavily infested with *H. gallinae*.—M. L. Clarke.

Bonaduce, A. (1950). Ricerche sull'influenza della vitamina B nell'evoluzione della paralisi infettiva dei polli. [**Effect of vitamin B on fowl paralysis.**]—*Nuova Vet.* **26,** 265-273. 3458

A general discussion. B. suggested that the causal agent of fowl paralysis interferes with the absorption of vitamin B complex and that, therefore, the provision of a product providing this range of vitamins for affected birds is advisable.—K. J. Sinclair.

Arvy, L. & Gabe, M. (1951). Histophysiologie —État des glandes endocrines au cours de l'erythroblastose aviaire transmissible (leucose aviaire). [**The condition of the endocrine glands in avian leucosis.**]—*C. R. Acad. Sci., Paris.* **232,** 260-262. 3459

Avian leucosis causes an increase in thyroid activity. The cortical tissue of the adrenal glands and the percentage of acidophile cells of the pituitary gland are increased. The structure of the pancreas and of the parathyroid is unchanged.—G. Davies.

See also abst. **3578** (book, nomenclature and coding of tumours).

NUTRITIONAL AND METABOLIC DISORDERS

MILLER, O. N. & RIGDON, R. H. (1952). **Pancreatic fibrosis in ducks on a nutritional basis.**—*Proc. Soc. exp. Biol., N.Y.* **80,** 165-168. [Authors' summary copied *verbatim.*] 3460

A degeneration of the acinar cells of the pancreas as the result of a nutritional deficiency has been described. The microscopic lesion was characterized by increased acidophilia and vacuoles within the cytoplasm of the acinar cells, pyknosis and karyorrhexis, which were followed by disintegration of the acinar structure and infiltration by fibroblasts. Finally, there was an increase in the perilobular and periacinar fibrous stoma and in some areas large amounts of the parenchymal tissue were replaced by fibroblastic material. No changes were observed in the islet cells.

HARTLESS, R. L. (1951). **The influence of a high-sucrose diet on the calcium and phosphorus percentage of the rat femur, and a comparison with its effect on the enamel and dentine of the rat incisor teeth.**—*Biochem. J.* **49,** 574-577. [Author's summary copied *verbatim.*] 3461

The calcium and phosphorus content and the calcium/phosphorus ratios in the rat femur were the same whether the animals were raised on a stock diet of Lever cubes or a diet containing 67% sucrose. This is in contrast to the effect on the enamel and dentine of the incisor teeth of the same rats (Hartles, 1951), and makes it clear that the 'sugar' disturbance is confined to the teeth and does not include bone.

The correlation between the amounts of calcium and phosphorus in enamel, dentine and bone has been evaluated.

The findings support the view that the processes of mineralization in the three tissues are significantly different.

BAILEY, G. L. (1952). **Studies on variations in the solids-not-fat content of milk. V. Variations due to winter feeding practice.**—*J. Dairy Res.* **19,** 169-178. [Author's summary slightly modified.] 3462

During the 12 years from 1935 to 1946 the type of foods given to 61 Dairy Shorthorn first calvers during the months of February and March changed so that the dry-matter intake of the cows rose and the dietary fat fell, but there was little change in the protein and starch equivalent they received. Milk yield varied directly with the amount of fat and starch equivalent in the diet and inversely with the dry matter. The solids-not-fat percentage of milk varied directly with the amount of starch equivalent, and inversely with the dry matter content, of the diet. The milk-fat percentage was not influenced by the foods given. It was shown that the fall in the level of solids-not-fat in the milk was largely due to the increase in the dry matter intake of the cows.

KEYS, A. (1951). **Cholesterol, "giant molecules", and atherosclerosis.**—*J. Amer. med. Ass.* **147,** 1514-1519. [Author's summary copied *verbatim.*] 3463

There is substantial correlation between the concentrations in human blood serum of total cholesterol and the "giant molecules" characterized in the ultracentrifuge by −10 to −20 Svedburg Units of sedimentation (G substances). The coefficient of correlation is at least of the order of 0·6 and may be as high as 0·7. In cholesterol-fed rabbits the resulting degree of atherosclerosis is well correlated with both the concentrations of G and cholesterol in the serum, the coefficient of correlation being of the order of 0·8. There is no evidence that the concentration of G is more critical than that of total cholesterol. Both G and total cholesterol show distinct tendencies to be maintained in higher concentrations in the serum of persons with coronary disease than in clinically healthy persons. Neither measurement, however, is a good disciminator between such patients and healthy persons. If there is any advantage to one of these measurements over the other in detecting or predicting coronary disease, the evidence is in favour of total cholesterol. There is no evidence that a level of G concentration in the blood may be of practical value as an indicator of the probability of present or impending coronary disease.

MCDONALD, I. W. (1952). **The role of ammonia in ruminal digestion of protein.**—*Biochem. J.* **51,** 86-90. [Author's summary copied *verbatim.*] 3464

In the rumen fluid, ammonia constitutes the main component of the non-protein nitrogen, when the animal is fed natural diets or a diet in which casein is the main source of nitrogen. The insoluble protein, zein, is only slowly digested in the rumen.

Indirect evidence suggests that ammonia represents an important intermediate in the digestion of dietary protein and its utilization by the symbiotic micro-organisms of the rumen for their growth.

The implications of these observations on the role of micro-organisms in the digestion of protein in the rumen are discussed.

CARDA APARICI, P. & OCAMPO OTERO, N. (1951). Sobre la anemia del ganado vacuno gallego ("Sequeira"). **[Nutritional anaemia in cattle, cobalt deficiency.]**—*An. Fac. Vet., Madrid.* **3,** 168-186. [English, French and German summaries.] 3465

A wasting disease of cattle in districts of Galicia was identified as a cobalt deficiency anaemia by chemical analysis of soils and fodder, supplemented by clinical observation. Some evidence of associated copper and iron deficiencies was found.—K. J. SINCLAIR.

THOMAS, B., THOMPSON, A., OYENUGA, V. A. & ARMSTRONG, R. H. (1952). **The ash constituents of some herbage plants at different stages of maturity.**—*Empire J. exp. Agric.* **20,** 10-22. 3466

Tables of the mineral constituents, including some trace elements, were given for four legumes, four herbs and eight grasses at different stages of growth. Legumes and herbs are good sources of minerals and better than grasses. With the exception of Na, the mineral contents decline in all species with advancing age. Practical implications were discussed and suggestions made for better use of the richer species.—CHARLOTTE M. WOOD.

COMAR, C. L., LOTZ, W. E. & BOYD, G. A. (1952). **Autoradiographic studies of calcium, phosphorus and strontium distribution in the bones of the growing pig.**—*Amer. J. Anat.* **90,** 113-129. [Authors' summary copied *verbatim.*] 3467

The deposition and removal of Ca^{45}, P^{32}, and Sr^{90} from the skeleton of the weanling pig have been demonstrated using the autoradiographic method. Regions of periosteal origin were characterized by sharp images in the autoradiogram, relatively slow deposition and slow removal. Regions of endochondral origin were characterized by diffuse images, rapid deposition and rapid removal. Possible explanations in terms of exchange and metabolic functions are presented. An autoradiographic method is presented for the estimation of rate of growth of various parts of the bone.

SAVASIVAN, V. (1951). **Studies on the biochemistry of zinc. I. Effect of feeding zinc on the liver and bones of rats.**—*Biochem. J.* **48,** 527-530. [Author's summary copied *verbatim.*] 3468

The effect of supplements of zinc at levels of 0·5 and 1·0% on the livers and bones of rats has been investigated.

Zinc supplements caused a marked lowering of the fat content of livers of rats fed on a diet on which control rats developed fatty liver.

Zinc appears to act as a lipotropic factor in the concentrations studied. This element also interferes with development and mineralization of bones.

GOODWIN, T. W. & WILSON, A. A. (1951). **Studies in vitamin A. XV. The variations in the serum β-carotene and vitamin A levels of cows near parturition.**—*Biochem. J.* **49,** 499-503. [Authors' summary copied *verbatim.*] 3469

The tendency of the serum β-carotene and vitamin A levels of cows to drop at, or just after, parturition has been confirmed. These changes are considered not significant for vitamin A and β-carotene *per se,* but are probably only a reflexion of general changes in the concentration of blood constituents at parturition.

No seasonal variations in serum vitamin A or β-carotene levels of cows at grass occurred during May-October 1948.

The high values for the vitamin A and β-carotene content of early colostrum and their rapid post-partum decline has been confirmed. Colostrum drawn up to 6 days ante-partum is also very rich in vitamin A and β-carotene; 94% of the colostral vitamin A is esterified.

The significance in cows of the ratio serum vitamin A/β-carotene is discussed.

STEWART, J., MCCALLUM, J. W. & WATTS, P. S. (1952). **Studies on vitamins A and C in bovines. The seasonal variation in the vitamin A reserves of cows.**—*J. comp. Path.* **62,** 237-243. [Authors' summary copied *verbatim.*] 3470

The livers of 657 cows, slaughtered at a public abattoir from September, 1945, to June, 1949, were assayed for carotene and vitamin A. They showed a marked seasonal variation in vitamin A reserves. The maximum values (300 to 400 I.U./g.) occurred in November-December, when the cows were on winter rations, and the minimum (75 to 90 I.U./g.) in April-May, within a short time of the animals being transferred from stalls to pasture.

The mean concentration of vitamin A in the 657 livers was $213 \pm 6{\cdot}12$ I.U./g.

ABRAMS, J. T. (1952). **Livestock and their environments: sunlight and vitamin D. Parts I, II, & III.**—*Vet. Rec.* **64,** 151-157, 174-178

& 185-193. [Author's summaries copied *verbatim*.] 3471

I. Astrophysical measurements of the intensity of the ultra-violet fraction of sunlight and biological investigations of the antirachitic power of ultra-violet light are to be found in the literature. The data have been combined with astronomical observations of the altitudes of the sun at different times and in different places, from which it has been calculated that with normally cloudless skies the annual amounts of vitamin D which may be derived by direct solar irradiation of the skin will not exceed the following values for latitudes 30°, 40°, 50° and 60° N., respectively: 1,200, 850, 600 and 350 I.U. of vitamin D per sq. cm. of surface measured normally to the incident rays.

Not less than some two-thirds of the sun's daily antirachitic power is concentrated into the four hours 10 a.m. to 2 p.m., regardless of latitude or time of year.

In latitudes 50° and 60° N., the potency of direct sunlight during the months of November to February, inclusive, is very small.

Examination of meteorological data for the British Isles (lat. 50° to 60° N.) suggests that clouds and other adverse climatic factors reduce the annual totals given above to 220 and 130 I.U. of vitamin D per sq. cm. respectively, for the relevant latitudes.

II. In a search for criteria of avitaminosis D in the field, some of the physiological properties of the vitamin are critically reviewed. Frank rickets and disturbances of the serum calcium and phosphate levels are considered to be less useful indicators than growth rates or the efficiencies of food utilization.

Since few British figures for the vitamin D content of grass, silage and hay are available, data from many sources have been considered in an attempt to discover how vitamin D content may be correlated with methods of crop production. It is contended that climatic conditions in Britain, coupled with modern methods of hay-making and the stress which recently has been laid upon the preservation of high protein and carotene contents in hay, are very liable to produce hay of low vitamin D potency. Grass and silage are certainly still less potent.

It has been calculated that direct sunshine in Britain cannot contribute more than an average of 3,000 to 4,500 I.U. of vitamin D per day to a beast of 1,000 lb. weight. Probable limits, which still may need to be diminished, are given.

III. The influence of factors such as methods of crop production and animal breeding programmes is discussed from the aspects of the vitamin D status of livestock in Britain. It is contended that there will be greater need for correlation of these various factors in the future than has hitherto been the case.

After a survey of clinical and other relevant evidence it is considered that some degree of avitaminosis D is likely to occur in livestock in these islands under normal conditions of management. As a corollary, the contention that an absolute phosphorus deficiency, as distinct from impaired absorption and utilisation is the direct cause of herd infertility in dairy cattle is regarded as not proven on the evidence so far presented.

Before a statement of the general conclusions which have been derived from the subject matter of this series of papers, a short section dealing with the wider possible relationships between livestock and their environment is included. That animal nutrition is an evolutionary process and one to which increasing attention must be paid if the present drive for increased animal production is to continue is the chief point put forward for discussion.

Robinson, K. L. & Coey, W. E. (1951). **A brown discoloration of pig fat and vitamin E deficiency.** [Correspondence.]—*Nature, Lond.* **168**, 997-998. 3472

Six female pigs were fed a vitamin E-deficient diet plus supplements. The fat of those without a vitamin E supplement was found after slaughter to be deep yellow brown in colour. This pigment may be similar to that found in vitamin E-deficient rats and chicks [Dam, H. (*V.B.* **14**, 2236) and Ganados, H. *et al.* (1949) *Brit. J. Nutrit.* **3**, 322] and related to the discoloration found commercially in pigs fed high levels of fish oil.

—Charlotte M. Wood.

Anderson, G. W., DuPre, W. M. & LaMaster, J. P. (1952). **A study of normal bovine serum solids with vitamin K added as an oral prophylactic for calf scours. I. Use of healthy newborn calves.**—*Amer. J. vet. Res.* **13**, 5-9. 3473

Three groups of 20, 21 and 16 healthy newborn bull calves were fed mixtures of (1) normal bovine serum solids (2) modified milk solids and (3) equal parts of serum solids and modified milk solids, all reinforced with vitamin K. None of the mixtures was harmful to the calves, but a few in each group were thought to have symptoms of primary scours in the first few days. The serum solid/milk

solid/vitamin K preparation appeared to reduce gastro-intestinal upsets.

—Charlotte M. Wood.

Pritchard, H. & Wraige, D. R. (1952). **The value of whale-liver meal and whale-meat meal as sources of the vitamin-B complex in the ration of farm animals.**—*J. Sci. Food Agric.* **3**, 74-77. [Authors' summary copied *verbatim*.] 3474

Whale-meat and -liver meals, long used in animal feeding-stuffs as protein-source, also contain B vitamins. Samples representing 1950-51 season's production of two British whaling companies operating from Great Britain have been examined for six members of the vitamin-B complex by microbiological methods. The results, compared with those obtained on other feeding stuffs and with published figures, indicate that whale-meat meal is similar to ordinary meat meal, but whale-liver meal is very rich in these factors. Examination of animals' requirements indicates that both products would make a substantial contribution to the daily vitamin-B needs of farm stock.

Draper, H. H. & Johnson, B. C. (1952). **Folic acid deficiency in the lamb.**—*J. Nutrit.* **46**, 123-131. [Authors' summary copied *verbatim*.] 3475

A series of newborn lambs maintained on a "synthetic milk" diet deficient in folic acid developed a syndrome characterized by leukopenia and diarrhea, followed in most cases by pneumonia and death. White cell regeneration was induced by the administration of folic acid but no detectable response was obtained from formyl folic acid. "X-methyl" folic acid was effective as an antimetabolite when administered early in the experimental period and 4-amino folic acid produced a rapid depression in leukocyte levels, followed by a gradual regeneration which occurred in spite of increased doses of the antivitamin. The "citrovorum factor" was effective in reversing the depressive effect of aminopterin on white cell levels in the blood. Megaloblastic cells were absent from the bone marrow of folic acid-deficient animals. The results obtained demonstrate that folic acid is an essential nutrient for the lamb.

Draper, H. H. & Johnson, B. C. (1952). **The riboflavin requirement of the Holstein calf.**—*J. Nutrit.* **46**, 37-44. [Authors' summary copied *verbatim*.] 3476

Twelve male Holstein calves were employed in a study of the riboflavin requirement during the first 10 weeks of life. Riboflavin levels were tested over a range of 0·30 to 1·80 μg. per gram of dry matter in a "synthetic milk" diet containing sulfathalidine. When fed at the rate of 4·5 l. of diet per 100 lb. body weight per day, no increase in growth rate was obtained at any level beyond 1·05 μg per gram of dry matter. Excellent growth was observed in a calf fed the diet ad libitum at this level of riboflavin. The results indicate that the riboflavin requirement of the Holstein calf up to 10 weeks of age is approximately 1·0 μg per gram of dry matter consumed.

Lehrer, W. P., Jr. & Wiese, A. C. (1952). **Riboflavin deficiency in baby pigs.**—*J. Anim. Sci.* **11**, 244-250. [Authors' summary copied *verbatim*.] 3477

Riboflavin deficiency of baby pigs is associated with alopecia, anorexia, poor growth, rough hair coat, dermatitis, scours, ulcerative colitis, inflammation of anal mucosa, vomiting, light sensitivity, unsteady gait, and many abnormal internal complications.

The supplementation of 1 to 1·5 mgs. of riboflavin per day for 16 days cured the external symptoms. However, many of the internal tissue changes were not corrected. This may have been due to insufficient amounts of riboflavin being fed, or the supplementation was for too short a period of time.

Rice, C. E. & Boulanger, P. (1950). **Parallel studies of complement and coagulation. I. The effect of vitamin C.**—*Canad. J. Res.* Sect. E. **28**, 262-270. 3478

Examination of blood samples from g. pigs receiving fresh grass and stored roots respectively revealed marked differences in ascorbic acid levels, but complement titre and prothrombin time were not affected.—R. Gwatkin.

Diernhofer, K. (1950). Zur Azetonämie der Milchkühe. [**Acetonaemia of dairy cattle.**]—*Wien. tierärztl. Mschr.* **37**, 526-537. 3479

A general discussion based on 152 cases of bovine acetonaemia, the treatment recommended being intravenous injection of glucose, 300–600 g. daily, until acetone disappeared from the urine. D. stated that 200–400 units of insulin may be given along with the first injection. Antacids, analgesics and antipyretics may be given and when tetany is suspected, calcium borogluconate.—N. Dean.

I. McBarron, E. J. (1952). **Metabolic diseases in dairy cattle.**—*Aust. vet. J.* **28**, 36-41. 3480

II. McClymont, G. L. (1952). **The neglected field of the aetiology and control of the metabolic diseases of dairy cattle.**—*Ibid.* 42-44. 3481

III. Blood, D. C. (1952). **Metabolic diseases of dairy cows.**—*Ibid.* 45-51. 3482

I. The author described milk fever, lactation tetany, acetonaemia and transit tetany in New South Wales. He considered that bovine metabolic diseases are becoming more complex and difficult to treat. In cases of milk fever which relapse, ketonuria and albuminuria have been observed and glucose saline therapy, rather than further doses of calcium, has been followed by good results in many cases. Respiratory distress in animals with a relapse is attributed to acidosis and attention is drawn to the possibility of calcium borogluconate increasing the tendency to acidosis.

Two forms of lactation tetany were described. The sub-acute form does not respond well to calcium and magnesium therapy and is so frequently complicated by bloat as to suggest to the author a digestive disorder rather than a specific metabolic disease. Removal from pasture and feeding with hay is an effective preventative measure. Acute cases may have a protracted course and be accompanied by hyperglycaemia and glycosuria. It is suggested that magnesium salts may exert their therapeutic effect by virtue of their narcotic action.

It is emphasized that acetonaemia should not be diagnosed merely because ketonuria is present. Conditions in which the author has found ketonuria include milk fever, endometritis, traumatic pericarditis, gastritis and when pre-natal death of the foetus has occurred. One form of treatment recommended is a mixture of bran and molasses fermented for 24 hours with yeast.

Transit tetany is associated with exercise and free access to water immediately after unloading from trucks. Prevention is possible by appropriate attention to these precipitating factors. The author has seen transit tetany in bullocks and dry cows as well as in pregnant animals and treatment with calcium and magnesium salts has been unsatisfactory.

II. The author urged greater intensification of research on the aetiology, pathogenesis and control of the metabolic diseases of dairy cattle.

Knowledge concerning the metabolism of monogastric animals is not always transferable to ruminants and information on metabolic endocrinology of ruminants is still very limited. The link between nutrition and metabolism, the possible importance of the adaptation syndrome and the need for further studies on mineral metabolism were also considered.

III. The main emphasis was laid on the adequate differentiation of the causes of those types of recumbency after parturition which might be confused with milk fever.

B. divided the main conditions requiring diagnostic consideration into four groups, namely other metabolic diseases, toxaemias, mechanical injury, and a group which may be caused by continued hypocalcaemia or over-treatment with calcium salts. He discussed the diagnosis of these conditions as complications of milk fever or as primary entities which might be confused with milk fever.

Acetonaemia has been observed in herds where there is heavy silage feeding, low level feeding in the dry period, or cobalt deficiency, or in highly inbred, high-producing stud herds, particularly of the Guernsey breed. Treatment with adrenal cortical extracts gives good results when hereditary influences appear to be operative and chronic recurring cases have to be dealt with.—J. D. Steel.

Thin, C. & Robertson, A. (1952). **The estimation of acetone bodies.**—*Biochem. J.* **51,** 218-223. [Authors' summary copied *verbatim.*] 3483

A method has been devised for the estimation as acetone of the individual ketone bodies —acetone, acetoacetic acid, β-hydroxybutyric acid and *iso*propanol—within the range 0–120 mg. acetone/100 ml.

The basis of the method is the diffusion of acetone into an alkaline solution of salicylic aldehyde with the production of an orange-red colour, the intensity of which is measured in a photo-electric colorimeter.

The application of the method to biological materials such as blood, milk, urine and rumen liquor is described.

Pennington, R. J. (1952). **The metabolism of short-chain fatty acids in the sheep. I. Fatty acid utilization and ketone body production by rumen epithelium and other tissues.**—*Biochem. J.* **51,** 251-258. [Author's summary copied *verbatim.*] 3484

The ability of rumen epithelial tissue of the sheep to metabolize butyric acid and, to a lesser extent, acetic and propionic acids, under aerobic conditions has been demonstrated; these compounds are amongst the chief products of fermentation in the rumen.

A large proportion of the butyric acid was converted to ketone bodies, mainly acetoacetic acid, by this tissue. Ketone bodies were formed also from acetic acid, but not from propionic acid.

The utilization of propionic acid was more rapid under an atmosphere containing 5% of carbon dioxide than under an atmosphere of oxygen.

The utilization of the volatile fatty acids by other sheep tissues has also been studied. Ketone bodies were produced from butyric acid by the epithelium of the reticulum and of the omasum as well as by liver tissue; all these tissues metabolized butyric acid more rapidly than acetic or propionic acids. The epithelia of the abomasum and caecum, and kidney tissue, did not show this preference for butyrate and also produced relatively less ketone bodies.

LEWIS, D. (1951). **The metabolism of nitrate and nitrite in the sheep. II. Hydrogen donators in nitrate reduction by rumen micro-organisms** *in vitro*.—*Biochem. J.* **49**, 149-153. [Author's summary copied *verbatim*.] **3485**

Hydrogen is a very active donator for the reduction of nitrate, nitrite and hydroxylamine to ammonia, in the presence of washed micro-organisms from sheep rumen.

Nitrite is an intermediary in the reduction of nitrate, and appears transitorily in the early stages of reduction by hydrogen.

The pH optima of nitrate and nitrite reduction in an atmosphere of hydrogen are 6·5 and 5·6 respectively, whereas the optimum for hydroxylamine reduction shows a broad plateau over the range of pH 6–7.

Formate, succinate, lactate, citrate, glucose, malate and mannitol are hydrogen donators for nitrate reduction, but at lower rates than hydrogen. Glycerol, xylose and ethanol have little activity and acetate, propionate and *n*-butyrate are inactive.

See also absts. **3458** (effect of vitamin B on fowl paralysis); **3559** (antibiotics and nutrition of chicks).

DISEASES, GENERAL

PASQUINI, M. (1951). Contribution à l'étude de la valeur du sérum anti-réticulo entothélial cytotoxique chez le cheval. **[The value of antireticular cytotoxic serum when injected into horses.]**—*Rev. vét. milit.* **6**, 193-196. **3486**

A course of subcutaneous injections of anti-reticuloendothelial cytotoxic (Bogomoletz) serum obtained from rabbits very materially improved the general condition of a champion show-jumping horse which had deteriorated as the result of an accident. No benefit, on the other hand, was obtained in two mares, one with a benign tumour, the other with cataract.

—G. P. MARSHALL.

PETRENKO, B. G. (1951). **[Bovine chronic haematuria.]**—*Veterinariya, Moscow.* **28**, No. 2. pp. 26-29. **3487**

Bovine chronic haematuria occurs in certain areas of the higher altitudes of the Ukraine Carpathian mountains. Affected cattle brought into haematuria-free areas do not infect the local cattle, but the latter if moved to the endemic areas contract the disease. Attempts at artificial infection have failed and no bacterial, parasitic or fungal agents could be demonstrated. The methods of management in the affected and in free areas do not differ, nor do the species of grasses, although the nutritive value of the grasses is poorer in the affected areas, and lead is present in the soil of those areas. P. stated that lead is suspected to be related to the incidence of the disease.—F.A.A.

LESBOUYRIES, G., CHARLIER, M. & DRIEUX, H. (1952). Corne hétérotopique chez un bovin. **[Cutaneous horn in an ox.]**—*Rec. méd. vét.* **128**, 155-158. **3488**

A cutaneous horn grew on a ten-year Gascon ox between the eye and nostril: it weighed 2·5 kg. and contained a yellow, waxy substance composed largely of keratinous cells.

—S. E. FOX.

SIGURDSSON, B., GRÍMSSON, H. & PÁLSSON, P. A. (1952). **Maedi, a chronic progressive infection of sheep's lungs.**—*J. infect. Dis.* **90**, 233-241. [Authors' summary modified.] **3489**

A chronic pneumonia of sheep is prevalent in many districts of Iceland. The epidemiological behaviour of the disease, which in Icelandic is called "maedi", indicates that it is an infectious process. The cause is not known, but it is believed that microscopically visible organisms have been ruled out; it is suspected that it may be a virus infection. The disease is characterized by an incubation period of about two years and a protracted course. The lungs of a typical case weigh from 800 to 2000 g. instead of the normal weight of 300 to 500 g. Anatomically the disease consists principally of a diffuse mesenchymal proliferation in the

lung. The bronchial and mediastinal lymph nodes are also enlarged.

The authors discussed other clinical and laboratory characteristics of this disease. No indication was obtained in their studies that the disease is primarily a metabolic or nutritional disorder. The disease is different from jaagsiekte [*V.B.* **5**, p. 838].

LUKE, D., GRACEY, J. F. & GORDON, W. A. M. (1952). **Oedema disease of swine.** [Correspondence.]—*Vet. Rec.* **64**, 201. 3490

Oedema disease has been reproduced experimentally in pigs by the intravenous injection of material from field cases of the disease. Positive results were obtained with intestinal contents, both unfiltered and filtered through a Chamberland L3 candle, and with an extract of oedematous stomach wall, but serial transmission of the condition has not yet been accomplished, nor has the presence of the active agent been established in the case of other tissues.

The authors refuted the suggestion of BARR [see next abst.] that excessive water intake is of any significance in the aetiology of the disease.—J. T. DONE.

BARR, W. A. B. (1952). **Oedema disease of swine.** [Correspondence.]—*Vet. Rec.* **64**, 168-169. 3491

In the light of clinical experience in Lincolnshire, B. considers that excessive water intake is a contributory factor in the production of oedema disease. Deprivation of food and water for 24–48 hours followed by a saline purgative and dry feeding has given good results in early cases.—J. T. DONE.

I. RENK, W. (1951). Die Ergebnisse der bisherigen Untersuchungen über den plötzlichen Tod der Schweine. **[Fatal syncope in pigs.]**—*Mh. prakt. Tierheilk.* **3**, 322-341. 3492

II. RENK, W. (1952). Diagnose und Differentialdiagnose des enzootischen Herzschlags der Schweine. **[Differential diagnosis of enzootic fatal syncope of pigs]**—*Ibid.* **4**, 1-26. 3493

I. R. reviewed the literature relating to the incidence, pathogenesis, diagnosis, morbid anatomy and prophylaxis of fatal syncope in pigs. Rather than actual cardiac changes, various infections, allergic reactions, forms of poisoning, intensive breeding and nutritional anomalies are nowadays incriminated as conditions responsible for this final outcome, and these views are reflected in the prophylactic measures proposed.

II. Macroscopic heart changes were found in 13, and signs of general circulatory insufficiency in 5 of 33 cases of enzootic fatal syncope in pigs. All showed signs of degenerative and inflammatory myocardial processes with extensive myolysis and multiple necrotic foci. The changes were quite different from, and far more extensive than, those seen in a few cases of sporadically occurring fatal syncope. Representative groups of pigs which had succumbed to other conditions were examined, and P. came to the conclusion that in enzootic fatal syncope, swine erysipelas, streptococcal septicaemia and foot and mouth disease the myocardial changes are most marked and are similar to each other as well as to those seen in human diphtheria. R. considers that in the differential diagnosis of enzootic fatal syncope the following diseases should be taken into consideration: syncope resulting from F. & M. disease; hyperacute septicaemia caused by *Erysipelothrix rhusiopathiae,* streptococci, staphylococci and *Bact. coli;* pasteurella infection; Frede's toxic myocarditis; heat stroke and sudden death in transit; poisoning by metallic salts and feeding stuffs; toxic dystrophy of the liver; anaemia and deficiency diseases in piglets; coccidiosis and strongyloidosis; avitaminoses; sporadic fatal syncope caused by valvular and coronary insufficiency of thrombotic or sclerotic origin.—G. P. MARSHALL.

ULLRICH, K. (1950). Drei wenig bekannte Krankheitsbilder beim Hunde. **[Three little-known syndromes in dogs.]**—*Mh. VetMed.* **5**, 154-156. 3494

The syndromes dealt with are "hard pad" disease, facial eosinophilic myositis and congenital dysfunction of the skeletal musculature in Scottish Terriers.

Facial eosinophilic myositis in Alsatians, first seen in 1940, is characterized by a striking appearance of the face and inability to feed and is associated with eosinophilia.

Congenital dysfunction of the skeletal musculature occurs in Scottish Terriers and a condition of hypertonicity results in transient convulsions which occur only during exercise. It is specific for the breed, and is thought to be a form of degeneration. It is suggested that treatment with curare or with quinine (antagonistic to acetylcholine) might be used.—ROY MACK.

SCOTT, G. R. (1952). **A note on intussusception in a Kenya poultry flock.**—*Vet. Rec.* **64**, 430. [Author's summary slightly modified.] 3495

The occurrence of five cases of intussus-

ception, normally a rare condition in fowls, in one flock of poultry is recorded. The aetiology was undetermined.

PAPPENHEIMER, A. M. (1952). **Spontaneous demyelinating disease of adult rats.**—*Amer. J. Path.* **28,** 347-355. [Author's summary copied *verbatim.*] 3496

In 2 adult rats which spontaneously had developed almost complete paraplegia, there was found extreme destruction of the ventral and lateral myelinated tracts of the spinal cord. The neuraxons, however, were preserved. The dorsal columns were but slightly affected. The central gray matter was intact, and no lesions were found in any part of the brain. The thoracic and abdominal viscera were not significantly altered.

Efforts to transmit the disease to young rats or mice were unsuccessful. No neutralizing antibodies against the demyelinating JHM virus of mice could be demonstrated in the serum of a rat obtained 6 weeks after the paralysis of the hind limbs was first noted.

STEIGMAN, A. J. (1952). **Occurrence of jaundice in inoculated suckling mice.**—*Proc. Soc. exp. Biol., N.Y.* **80,** 177. [Author's summary modified.] 3497

Jaundice was observed in infant mice inoculated with bacteria-free filtrates of whole carcass suspensions of unweaned mice. A haemolytic anaemia was associated with the jaundice; mice more than four days of age at the time of inoculation appeared resistant. There is no evidence that the phenomenon was caused by a primary infectious agent.

JENNINGS, A. R. (1952). **The peripheral blood picture in some diseases of animals.**—*J. comp. Path.* **62,** 161-177. [Author's summary copied *verbatim.*] 3498

Examinations of single or multiple blood samples have been made in a variety of diseases of domestic animals.

The total peripheral blood picture is of no diagnostic significance except in the case of the anaemias. The leucocyte picture may, in conjunction with the clinical picture, be of some value as an aid to prognosis.

BROMAGE, P. R. (1952). **Effect of induced vascular hypotension on the liver. Alterations in appearance and consistence.**—*Lancet.* **263,** 10-12. [Author's summary slightly modified.] 3499

The vascular hypotension induced by sympathetic block may produce local hypoxia in the liver before other tissues are affected. This hypoxia may cause vaso-depressor material to be released in the liver, producing local vasodilatation.

Observation of the liver in 17 human patients during laparotomy under high epidural spinal block supported this suggestion. In 14 patients the liver appeared cyanosed at systolic pressures between 45 and 60 mm. of Hg. although tissues elsewhere were well oxygenated. In 11 the liver became turgid and rubbery to the touch at systolic pressures between 45 and 60 mm. These changes were reversed when the blood-pressure was raised by methedrine or noradrenaline.

Occult liver damage may result from this temporary hypoxia and the systolic pressure should not be allowed to fall below 60 mm. which was found to be the critical figure for the obvious changes in this series.

OGANESYAN, P. A. (1951). **[Treatment of non-infectious diseases of the alimentary tract.]** —*Veterinariya, Moscow.* **28,** No. 5. pp. 52-57. 3500

The physiological and pathological processes of digestion were studied by means of fistulae. It was found that colic in horses, tympanites, gastric catarrh, obstruction and suchlike ailments of the alimentary canal could be much more effectively treated if aperients were given, thus accelerating the passage of food. The results of administering a number of aperients were described.—F.A.A.

See also abst. **3579** (book, diseases of apes).

POISONS AND POISONING

BARNES, J. M. (1951). **The use of experimental pathological techniques in assessing the toxicity of chemical compounds.**—*Proc. Conf. Med. Res. Coun.* 29th-31st March 1950. [The application of scientific methods to industrial and service medicine.] pp. 49-55. 3501

B. discussed the value of experimental work on animals in assessing the toxicity of chemical compounds and the difficulties that arise concerning attempts to answer practical questions. He considered the approach to a new problem in general outline, emphasizing the value of simple methods in preference to the use of an elaborate technique. He proceeded to discuss this experimental work under

the headings:—(a) Is this substance toxic? (b) Is this substance more poisonous than that? (c) Will continued ingestion or absorption of small quantities of this material over years have any deleterious effects? (d) Treatment, and (e) Conclusion. Although the questions may be easy to ask, experiments may be difficult to construct within the terms of the question and it may be quite impossible to interpret the results of the experiment. He mentioned the increasing number of chemical compounds produced as chemotherapeutic agents or insecticides and suggested that more time should be spent on finding how the good compounds work so that a more intelligent approach could be made to the construction of new ones.

—JOHN SEAMER.

BISCHOFF, A. (1951). Rubazinvergiftung bei einem Hund. [**Prontosil (4′-sulphonamido-2,4 diaminoazobenzene) poisoning in a dog.**]—*Wien. tierärztl. Mschr.* **38**, 381-382. 3502

A note reporting that a dog developed toxic symptoms after dosage with prontosil. No details are given as to dosage or the size of the dog.—E. WALLICZEK.

WAGENER, K. (1952). **Possible effects of German wood preservative on cats and dogs, with special reference to hyperkeratosis.**—*J. Amer. vet. med. Ass.* **120**, 145-147. [Author's conclusions and summary slightly modified.] 3503

Observations under field conditions in Germany indicate that cats may be adversely influenced by the chemical agents found in a certain batch of a German coal-tar-wood preservative [see *V.B.* **22**, 519]. Cats and dogs so influenced by the noxious wood preservative under conditions resembling those in the field in Germany, showed some of the symptoms seen in hyperkeratosis in cattle. Cats and dogs might be used, with certain precautions, for experiments on hyperkeratosis. Attention should be paid to the behaviour of cats and dogs on premises where hyperkeratosis occurs in cattle.

SCHULZ. (1951). Ein Beitrag zur Kasuistik der Azaleenvergiftung. [*Azalea pontica* **poisoning in a goat.**]—*Dtsch. tierärztl. Wschr.* **58**, 54. 3504

A clinical account of *A. pontica* poisoning in a goat and of its treatment.—K. J. SINCLAIR.

CARDASSIS, J. (1951). Intoxication des équidés par *Cannabis indica*. [**Poisoning of horses by** *Cannabis indica*.]—*Rec. Méd. vét.* **127**, 971-973. 3505

An account of the rapid death of 15 horses and mules following the ingestion of *C. indica* grown illegally for the production of hashish.

—R. MARSHALL.

DEKKER, N. D. M., VAN ECK, G. & STOKREEF, G. (1950). Kruiskruidvergiftiging bij runderen en een paard. [*Senecio* **poisoning in cattle and horses.**]—*Tijdschr. Diergeneesk.* **75**, 376-382. [English summary.] 3506

An account of poisoning of cattle and a horse by *S. jacobaea*.—C. A. VAN DORSSEN.

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

ANON. (1952). **Present status of use of ultrasonic energy in physical medicine.**—*J. Amer. med. Ass.* **148**, 646-651. 3507

This is a report of work done at the Mayo Clinic and Foundation, Rochester, Minn., the publication of which has been authorized by the Council on Physical Medicine and Rehabilitation of the American Medical Association. The history of the study of ultrasonic energy was briefly reviewed, and ultrasonic apparatus and the effects of ultrasonic radiation were described. In animals ultrasonic energy can cause destructive reactions in tissues—at the point of application, throughout its pathway through the tissues, or at the point of exit. Continued laboratory investigations of the therapeutic and diagnostic possibilities of this new and potent agent are justified.—W. R. BETT.

YOCKNEY, G. L. (1951). **The sulphonamides in veterinary practice.**— *Aust. vet. J.* **27**, 88-92. Discussion pp. 92-93. 3508

Y. described his experience of the use of various sulphonamides in such diseases as foot rot, calf diphtheria, coccidiosis, enteritis and infections of the respiratory tract, and bovine mastitis. His experimental results generally confirmed those of other workers.—J. D. STEEL.

MÖCKEL, K.-H. (1952). Meerwasser als Therapeutikum bei Pferden. [**Sea water therapy in horses.**]—*Mh. VetMed.* **7**, 31-34. 3509

Cases of emaciation, without recognizable organic disease, appeared to benefit by the parenteral administration of sea water. Literature on sea water therapy was reviewed.

—ROY MACK.

Nesterenko, Z. M. (1951). **[Therapy by tissue grafting in veterinary practice.]**—*Veterinariya, Moscow.* **28,** No. 2. pp. 40-44. 3510

It is claimed that the intramuscular grafting of healthy muscle tissue from animals just killed acts as a stimulant to recovery in such illnesses as general debility, certain lameness, certain cases of paralysis, and various digestive disorders of a chronic nature. A description was given of the collection, preparation and storage of tissue, and the sites chosen. On all but horses, heterogeneous tissue gave equally good results when grafted on domestic animals. —F.A.A.

Taplin, G. V., Bryan, F. A., Baurmarsh, L., Greene, W. W., Hayes, E., Ralston, W. & Adolph, W. (1950). **Relation of particle size to inhalation therapy with micropulverized penicillin preparations.**—*Ann. Western Med. Sur.* **4,** 383-390. 3511

Intranasal inhalation of micropulverized penicillin preparations with a particle size distribution of 0·025 to 25 μ (ideal range 0·5–5) provides effective topical treatment to the whole respiratory tract as well as systemic therapy. Penicillin concentrations of 1·3–4·3 units per g. are found in the lung 12–14 hours after inhalation.—W. R. Bett.

McVay, L. V., Jr. (1952). **Studies on the concentration and bacterial effect of aureomycin in different portions of the intestinal tract.**—*J. clin. Invest.* **31,** 27-31. [Abst. from author's summary.] 3512

The oral administration of therapeutic amounts of aureomycin to human beings results in the rapid attainment and rather prolonged maintenance of significant intestinal concentrations of this antibiotic. These first aureomycin intestinal levels indicate that this antibiotic probably exerts its major therapeutic effect in human amoebiasis by a direct action on *Entamoeba histolytica;* though there may be a minimal indirect action on amoebae resulting from alteration of the intestinal bacterial flora.

The studies reported indicate that this antibiotic should be an effective agent for preoperative preparation of the intestine.

Schneider, M., Gilliam, H. D., Pomerat, C. M., Ormsby, A., Eggers, G. W. N. & Ainsworth, W. H. (1950). **Influence of antireticular cytotoxic serum on the healing of human fractures. I. Roentgenological and clinical observations.**—*Texas Rep. Biol. Med.* **8,** 3-10. 3513

Of 22 patients with 32 fractures, 11 were given injections of stimulating doses of antireticular cytotoxic serum (ACS) as soon as possible following the injury, and 11 were given equal quantities of normal rabbit serum. All were observed roentgenologically and clinically. As comminuted and compound fractures were more frequent in the ACS-treated group, a statistical analysis is not justified, but a tendency to more rapid healing is suggested for the ACS group.—W. R. Bett.

See also absts. **3254** (nitrogen mustard in mastitis); **3256** (benemid in streptococcal endocarditis); **3271** (penicillin for prevention of *C. pyogenes* infection in cattle); **3287** (brucellosis); **3305** (sensitivity of *Actinomyces israeli* to antibiotics); **3323** (sulphaquinoxaline in avian coccidiosis); **3325** (babesiasis in horses); **3326** (acaprin); **3361** (antiviral agents); **3397** (penicillin in Newcastle disease); **3434-3435** (tick-killing agents); **3448** (hetrazan); **3450** (parasitic bronchitis); **3453** (*Ascaris* infestation in dogs and cats); **3500** (non-infectious diseases of the digestive system); **3535** (sulphanilamide and fertility of bull semen); **3580** (book, medicinal chemistry).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Herter, K. (1950). Vergleichende Physiologie der Tiere. **[Comparative physiology of animals. Parts I & II.]** pp. 155 & 148. Berlin: Walter de Gruyter & Co. DM. 2.40 each. 3514

A great amount of information has been compressed into the 300 pages of these two small volumes, with no sparing of diagrams which are excellent. The chapters which deal in detail with the various physiological processes (feeding, breathing, circulation, nervous system, etc.) in numerous species from a comparative angle should be of value for reference to zoologists and of interest to physiologists and biochemists who wish to relate their own field of work to the animal kingdom as a whole. —R. Marshall.

Rovery, M. & Desnuelle, P. (1950). Sur la répartition de la lysine dans la molécule de globine de cheval. **[The distribution of lysine in the globin molecule of the horse.]**—*C. R. Acad. Sci., Paris.* **230,** 1112-1114. 3515

The globin molecule contains 40 lysine residues. Pepsin digestion gave products with equal distribution of lysine, but trypsin digestion gave small molecular fragments richer in lysine than an unhydrolysed residue. The latter result may, however, indicate some synthetic activity of the enzyme.—R. Marshall.

Eggleton, M. G. (1951). **The state of body water in the cat.**—*J. Physiol.* **115,** 482-487. [Author's summary copied *verbatim.*] 3516

When urea is injected intravenously into cats, its concentration in the plasma indicates that it has diffused into $63 \pm 1{\cdot}6\%$ of the body weight. When hypertonic NaCl solution is so injected, its concentration in the plasma indicates that the NaCl appears to become distributed in only $49{\cdot}5 \pm 1{\cdot}08\%$ of the body weight. The origin of the difference between the two values is discussed. No satisfactory explanation has been found, and it would appear that some, at least, of the cells are not in simple osmotic equilibrium with the extracellular fluid.

Linzell, J. L. (1952). **The silver staining of myoepithelial cells, particularly in the mammary gland, and their relation to the ejection of milk.**—*J. Anat., Lond.* **86,** 49-57. [Author's summary copied *verbatim.*] 3517

The findings of Richardson (1949) [*V.B.* **20,** 1439] that the myoepithelial cells of the mammary gland of the goat can be selectively stained with silver has been independently confirmed for other species and extended to the same cells in the sweat glands and the submaxillary salivary glands.

The appearance of the myoepithelium in silver stained sections is described and evidence discussed in favour of the view that this tissue in the mammary gland is responsible for the phenomenon of the 'letting down' or ejection of milk in response to suckling or milking.

Heinimann, H. (1950). Blutkörperchensediment, Sedimentierungsgeschwindigkeit und Hämoglobingehalt beim Halbblutpferd. **[Blood sedimentation rate and haemoglobin content in light horses.]**—*Schweiz. Arch. Tierheilk.* **92,** 271-295. [English, French and Italian summaries.] 3518

341 half bred horses of Irish, Hungarian, Anglo-Norman, Holstein, French, Danish, German (Hannover) and Swedish breeds were examined. The haemoglobin content (by Sahli's method), sedimentation rate (method of Steck and Streit) and spontaneous sedimentation were determined.

Graphs were given showing the frequency of various values. Based on these, the zones between pathological (low) and normal values were found to be: 20–50 mm. for sedimentation after 15 min. (sedimentation rate) at 18°C.; 50–58 for the haemoglobin values and 30–36 for spontaneous sedimentation read after 24 hours. Spontaneous sedimentation and haemoglobin values were found to run about parallel. Breed and age did not seem to influence any of the values.—W. Steck.

Boulanger, P. (1952). **Seasonal changes in the coagulability of the blood of turkeys.**—*Canad. J. comp. Med.* **16,** 222-229. [Author's summary slightly modified.] 3519

Differences have been observed in the rate and extent of clot retraction of the blood and the prothrombin content of the plasma of male and female turkeys during the spring and early summer. The differences in coagulability were not, however, the result of changes in the blood of the females during the laying period, but were traceable rather to a prolongation of clot retraction in the male dependent apparently on a reduction in the prothrombin content of the blood. In late summer and early autumn, after laying was over, these differences in the coagulative activity of blood of the two sexes tended to disappear with the return of the prothrombin time of the plasma of the male turkeys to the level of the previous December.

The presence of cloudiness, that is a high lipoid content, in the blood of the female birds had no apparent effect upon the coagulability of the blood.

Kuznetsova, V. M. (1950). **[New experimental data on the physiology of digestion in the horse. I.]**—*Konevodstvo.* **20,** No. 4. pp. 32-37. 3520

A duodenal fistula was made in an 11-month-old foal in order to study the digestion, details being given of the surgical procedure. From the tenth day after the operation for a period of six months seven different diets were given, the amount, character and time taken by each to pass from the stomach being recorded. The amount of chyme varied in quantity from 92 to 140 litres per day. It was always greater than the amount of ingested food and water in proportions between 3·2:1 and 4·6:1, depending on the diet. Per unit of fodder green clover induced the greatest amount of digestive juices, produced most chyme, had the least acidity and was the quickest to be digested. Details are set out in tables.

—F.A.A.

Hill, H. E., Flanary, H. G., Kornetsky, C. H. & Wikler, A. (1952). **Relationship of electrically induced pain to the amperage and the wattage of shock stimuli.**—*J. clin. Invest.* **31,** 464-472. [Authors' summary modified.] 3521

An apparatus has been described that could be modified for controlling either the delivered wattage or the delivered amperage of electrical stimuli of fixed duration and which provided a

safety device to avoid accidental repetitive shocking.

With one exception, the data obtained indicated that the power developed by a particular voltage in a biological circuit of a certain measured resistance does not correspond with the power developed at the same physical resistance by the same voltage. This suggests that a biological circuit is characterized not only by resistance, but by unknown factors. Therefore, delivered wattages calculated on the basis of $P=I^2R$, where R is merely the prestimulation biological resistance, are only "apparent" powers. However, under the conditions of the experiments described such "apparent power" corresponded quite closely to I^2R values calculated on the basis of an equivalent physical circuit.

Post-addict subjects judged the intensities of electric shocks delivered by the apparatus. The correspondence of the subject's verbal reports with the amperage and the wattage of stimuli was measured separately, and the differences were statistically evaluated. After a practice series which was followed by the application of four stimuli of standard amperage and wattage, resistances were reduced by scrubbing with saline paste the surfaces to which the electrodes were applied. Two consecutive power series of nine stimuli each were then administered. In each of these test series, one stimulus was of the standard power, four were higher and four were lower powers than the standard. During the decrease in resistance following the scrubbing procedure, the amperages of the test stimuli were considerably higher than those of the practice period. In response to each stimulus, the subject reported whether it was "stronger" or "weaker" than the previous administered standard.

It was shown conclusively that apparent delivered wattage correlates more highly than amperage with estimation of the intensities of electric shock stimuli.

The application of these findings to studies on pain and to other problems was discussed.

Singh, S. I. & Singh, I. (1951). **Active relaxation of unstriated muscle produced by adrenaline.** [Correspondence.]—*Nature, Lond.* **168**, 829-830. 3522

Experiments with unstriated muscle indicated that adrenalin may produce active and passive relaxation, passive only, or no effect.

—John Seamer.

Julian, L. M. (1952). **Studies on the subgross anatomy of the bovine liver. III. Comparative arrangement of the blood vessels of the livers of the bovine and equine fetuses.**—*Amer. J. vet. Res.* **13**, 201-203. [Author's summary modified.] 3523

Illustrations of the vascular arrangement of the livers of bovine and equine foetuses, as demonstrated by the vinylite-corrosion technique, were presented. Equine foetuses of four to eight months' gestation showed no evidence of anastomosis between the hepatic, portal or umbilical veins, and the posterior vena cava; whereas, a well-developed ductus venosus could be demonstrated with ease in the livers of bovine foetuses and new-born calves.

Jewell, P. A. (1952). **The anastomoses between internal and external carotid circulations in the dog.**—*J. Anat., Lond.* **86**, 83-94. [Author's summary copied *verbatim*.] 3524

The arterial supply to the dog's head has been examined in a series of injected specimens in order to demonstrate the arterial pathways by which the brain may receive a blood supply. Five anastomoses are described: the occipital-vertebral anastomosis, the ascending pharyngeal-internal carotid anastomosis, and the three anastomoses between the internal maxillary artery and intracranial vessels—the anastomotic artery, the ophthalmic anastomosis, and the ethmoidal anastomosis.

Of these anastomoses the occipital-vertebral anastomosis and the anastomotic artery are considered to be important routes by which carotid blood might reach the brain. In particular the role of the anastomotic artery is discussed: it is a contributory vessel to the internal carotid flow. The various forms which this artery may assume are described.

The similarity between the carotid vascular pattern in the dog and the aeluroid carnivores is discussed.

Godina, G. (1950). Osservazioni sulla struttura dei gangli simpatici dei mammiferi domestici. **[The structure of sympathetic ganglia in domestic mammals.]**—*Arch. Vet. Ital.* **1**, 41-47. [English, French, German and Spanish summaries.] 3525

G. studied the comparative morphology of the neurones in the vertebral and prevertebral sympathetic ganglia in domestic animals. The structural changes of neurones through the different life periods are less important in domestic animals than in man; they are much more conspicuous in cattle than in small ruminants and horses. Polycellular dendritic forms have been found; and fenestrated cells are numerous in cattle.—M. Bertani.

SEBRUYNS, M. & LAGASSE, A. (1950). Bijdrage tot de studie van de ultrastructuur der pigmentkorrels met behulp van het electronenmicroscoop. **[Electron microscope study of pigment granules.]**—*Vlaam. Diergeneesk Tijdschr.* **19,** 225-232. [English, French and German summaries.] **3526**

The pigment granules of the epithelium of the retina of the human eye and the connective melanocytes of the tadpole's tail and of the pigment cells of the salamander are structures consisting of several hundreds of microgranules enclosed in a membrane. According to the authors the pigment granules of the retina have a filamentous appendage which plays a role in the active movements seen in the granules.—C. A. VAN DORSSEN.

See also abstr. **3459** (condition of endocrine glands in avian leucosis); **3581** (book, thyroid and parathyroid glands).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

LINDENSTRUTH, O. (1952). Untersuchungen über die Tenazität von Brucella suis bei der Kühlung und Einpökelung des Schweinefleisches. **[Resistance of *Br. suis* in chilled and pickled pork.]**—*Lebensmitteltierarzt.* **3,** 37-38. **3527**

Neither chilling to 0°, 2°, or 4° C. nor pickling killed four strains of *Br. suis,* pathogenic to g. pigs, in experiments extending over two months.—W. R. BETT.

PAIVA, O. C. (1951). Inspecção sanitária dos enchidos e das matérias-primas usadas na sua preparação. **[Inspection of tinned meats and of the raw material used in their preparation.]** — *Bol. Pecuária, Lisboa.* **19,** 1-237. **3528**

The whole issue of the journal is devoted to a very thorough review of the subject of tinned meats from the sanitary inspector's point of view. P. dealt with the inspection of the meat used and then described the various flavouring agents of vegetable origin, and other raw materials which may legitimately be used in tinned meats.

There are chapters on adulteration and fraudulent practices and their detection; and chapters on the aetiology and recognition of the toxic infections resulting from the consumption of prepared meats.—I. W. JENNINGS.

MÜLLER, J. (1952). **Bacteriological examination of imported meat-and-bone meal and the like.** —*Nord. VetMed.* **4,** 290-295. [In English, French and Danish summaries.] **3529**

Routine culture and mouse pathogenicity tests on meat imported into Denmark has resulted in the frequent isolation of *Erysipelothrix* and *Salmonella* organisms. The potential danger of infected meat for livestock was discussed. —A. H. LINTON.

SZUMOWSKI, P. & LE BARS, H. (1952). Présence de substances oestrogènes dans les tissus de porcs traités par le diénoestrol. **[Oestrogen content of the tissues of pigs treated with stilboestrol.]**—*Rec. Méd. vét.* **128,** 159-164. **3530**

The use of oestrogens to stimulate fattening of domestic animals used for food may be dangerous as oestrogens can be detected in the tissues of the carcass. In the carcasses of pigs which had been given a large dose of stilboestrol diacetate, the fat was found to contain 5–9 mg. of oestrogen per kg.; the kidneys also contained considerable quantities; the liver and muscle tissue contained less.—R. MARSHALL.

COLOMBEL, J-M-G. (1950). Toxicité des oestrogènes de synthèse dans la chair des coqs castrés chimiquement. **[Toxicity of the flesh of cockerels castrated by implantation of oestrogens.]**—*Thesis, Alfort.* pp. 34. **3531**

Experimental results were given of the residual amounts of stilboestrol in the flesh and various organs of cockerels, resulting from castration by implantation of synthetic stilboestrol. The toxic effects on animals and human beings were described.—G. DAVIES.

MULLIGAN, H. W. (1950). **Review of current and projected activities.**—*Bull. bibliogr. Bur interafr. Tsetse.* pp. 224-233. **3532**

This report briefly explains the creation and development of the Tsetse Fly and Trypanosomiasis Permanent Inter-African Bureau, Leopoldville, which is divided into four sections: Entomology, Epidemiology, Protozoology and Veterinary. A review was given of current work and of work planned for the future.—MARGARET B. COOPER.

See also abstr. **3415** (effect of pasteurization on *R. burneti* in milk); **3446** (cysticercosis in calves); **3570** (report, Union of South Africa).

LIVESTOCK HYGIENE

Bèchade, A. & Bru, C. (1952). Désinfection et hygiène vétérinaire. **[Disinfection and veterinary hygiene.]**—*Rec. Méd. vét.* **128,** 333-350. 3533

Stables and stalls may be cleaned with surface-active materials, treated with insecticides, whitewashed, and disinfected. Various substances for these purposes are enumerated. Experimental results of such treatments are given. —S. E. Fox.

REPRODUCTION AND REPRODUCTIVE DISORDERS

Mascarenhas, H. & Gomes, W. V. (1950). Contribuição ao estudo da electro-ejaculação em bovinos. Novo tipo de elétrodo bipolar e técnica de sua aplicação. **[Electro-ejaculation of semen in bulls.]**—*Inst. Zootec. Minist. Agric., Rio de Janeiro.* Publ. No. 8. pp. 30. [Abst. from English summary.] 3534

Using a new type of bipolar electrode the authors obtained semen from *Bos taurus* and *Bos indicus*. They used electric excitation of ejaculator neural centres, with alternating current 0·70 milliampères at 5, 10 or 15 volts; they introduced a new technique of pulsating type; they have made a smaller apparatus for anal introduction and used a smaller number of contact rings. The semen obtained was in good condition for use in artificial insemination and the authors explained the possibility of practical application of the new method in all cases in which the artificial vagina cannot be employed.

Holt, A. F. (1952). **The effect of sulphanilamide on the fertility of bull semen.**—*Vet. Rec.* **64,** 93-94. [Author's summary copied *verbatim*.] 3535

A split sample trial carried out over the winter of 1950-51 at one centre in Devon showed that addition of sulphanilamide to egg yolk citrate buffer did not significantly affect the conception rate of the centre or of any of the individual bulls; similiarly, no alteration occurred in the relationship between presumed conception rates at three weeks and those at three months, indicating that the incidence of early foetal death was not affected.

Garren, H. W. & Shaffner, C. S. (1952). **The effect of temperature and time of storage on the fertilizing capacity of undiluted fowl semen.**—*Poult. Sci.* **31,** 137-145. [Authors' summary copied *verbatim*.] 3536

The effects of storage temperatures between 0° and 40°C. on the fertilizing capacity of undiluted fowl semen were studied. The optimum storage temperature was found to be 10°C. at which a practical storage period of 6 hours was found possible. Storage at 15°C. was found practical for periods of 3 to 4 hours. Semen stored beyond 90 minutes at 20°, 30° or 40°C. resulted in negligible fertility. The fertilizing capacity of sperm stored at 0°C. or 5°C. dropped sharply after a few minutes at these temperatures, yet motility was best maintained at these levels. There was evidence that sperm lowered quickly to 0°C. suffered temperature shock. Gradually changing the temperature seemed to lessen the effects of this condition.

Hens inseminated with stored semen did not remain fertile for so long a time after a single insemination as did those hens inseminated with fresh semen. The fertility of the groups inseminated with stored semen was increased by either increasing the quantity of semen used per bird or the frequency of insemination.

Dalgaard-Mikkelsen, S. (1949). Spermahyaluronidase. **[Semen hyaluronidase.]**—*Nord. VetMed.* **1,** 769-790. [In Danish. English summary.] 3537

The author found that viscosity reducing androgenous hyaluronidase was present in the semen of the horse, whale, rat and g. pig, but not in the testicles of ten mature cocks examined. Search for its presence in testicular tissues of 17 albino rats of varying ages and weighing from 40–250 g. confirmed that the initial production of hyaluronidase takes place towards sexual maturity, the probable site of origin being assumed to be the germinal epithelium.

It was found that in the semen of 50 bulls, of which six were of low fertility resulting from low motility of the spermatozoa, there was a correlation between the density of the spermatozoa and hyaluronidase activity. The semen of the inferior bulls contained as many hyaluronidase units as did that of the normal ones. Killing the spermatozoa of one portion of a bull's ejaculate by a solution of phenyl-mercury-acetate (1:10,000) and storage for three days had no significant influence on the hyaluronidase content, the liberation of hyaluronidase apparently being independent of whether the spermatozoa were alive or dead. Exposure of

bull semen to "cold shock", *i.e.*, quick freezing at −20°C. and varying the rates of thawing, indicated that the liberation of hyaluronidase was unrelated to the activity of the spermatozoa, thus excluding any active production by the cells. From a specimen of bull semen stored for 24 hours and then vigorously centrifuged 30–60% of the hyaluronidase content was removed with the seminal plasma. When spermatozoa were repeatedly washed with saline or distilled water the first washing of distilled water, owing to heavier cell damage inflicted, contained more hyaluronidase than the first washing of saline. A high content of hyaluronidase in semen therefore indicates injury to the spermatozoa; a low content indicates that the spermatozoa are healthy. Morphological studies of bull spermatozoa exposed to such washings showed that there had been a loosening of the head caps; this increased with the number of such treatments. Hyaluronidase appears to be related to the head caps of the spermatozoa and not to be liberated by simple cell diffusion. Supporting this assumption is the fact that the hyaluronidase content of bull semen measured per unit number of spermatozoa is about ten times that of horse semen and 20 times that of human semen, and is therefore well correlated with the respective size of the head caps of the spermatozoa in the different species.

Even high concentrations of hyaluronidase did not reduce the viscosity of the cervical and uterine mucus of cows, but did considerably reduce the viscosity of follicular fluid obtained by puncturing ripe follicles from cows. Its power of dispersing the cells of the cumulus oophorus by reducing the viscosity of their intercellular substances, and thus of denuding the ovum, was clearly seen in hanging-drop preparations where fluid currents are liberal, but not under cover slips. The corona radiata layer of cells was never seen to be dispersed by hyaluronidase alone, but its dispersal was thought to be accomplished by some tubal factors.

—Gustav Naerland.

Rajasekarasetty, M. R. (1951). **Relation of sperm morphology to genotypically controlled variations in fertility.** [In mice.]—*Proc. Soc. exp. Biol., N.Y.* **78**, 845-848. [Author's summary modified.] 3538

Most of the spermatozoa in the sterile individuals of the genotypes studied were normal looking and presumably physiologically inefficient. R. agrees with Chang in stating that a morphologically normal sperm may be physiologically incapable of effecting fertilization. The fact that the acrosome alterations as revealed by periodic-acid Schiff technique may easily be overlooked when treated by usual methods suggests that differences in such non-chromosomal elements may be of considerable importance in evaluating morphological normality of a spermatozoon.

Beatty, R. A. (1951). **Heteroploidy in mammals.**—*Anim. Breed. Abstr.* **19**, 283-292. 3539

This review indicates that a state of heteroploidy, defined as multiplication of cellular chromosome number, has been demonstrated in three mammals—mouse, rabbit and pig. B. presented evidence from many workers in support of this contention. Of particular interest is the reference to colchicine-induced changes in young rabbits born after artificial insemination of the does with colchicine-treated spermatozoa. The value of further work in regard to the effect of such discoveries on animal breeding was briefly discussed.

—C. W. Ottaway.

Anon. (1952). **Intrasplenic grafts of ova and ovaries.**—*Lancet.* **262**, 553. 3540

Complete ovaries grafted into the spleens of ovariectomized mice produce tumours which may be granulosa-celled growths, luteomas or mixtures of the two. On the other hand ova grafted into spleens may be left as long as 60 days before being regrafted into the ovaries of foster-mothers and producing normal living young mice. It is therefore suggested that the origin of the new growths following ovary grafting may be the graafian follicles rather than the ovum.—E. J. H. Ford.

Rao, C. K. (1951). **Certain aspects of fertility in the cow.**—*Indian J. vet. Sci.* **31**, 81-88. [Author's conclusion modified.] 3541

Analysis of the records of four dairy herds under the supervision of the Animal Husbandry Department of the University of California for periods from 1934-46 revealed that:—(1) High herd fertility can be maintained in a herd partially infected with *Brucella*, having cows with high reproductive efficiency under conditions of good management. Mere occurrence of the disease need not necessarily lower the fertility of the herd in a striking manner. (2) More services are required for conception following abortion than after normal calving. (3) Reproductive efficiency is lowest in heifers; it improves with age at least as far as the first three conceptions are concerned.

Micheletto, B. (1951). Temperatura basale in rapporto al ciclo estrale delle bovine. Comportamento della curva termica al momento della ovulazione. [**Basal body temperature during the oestrous cycle in cows.**]—*Riv. Med. vet. Zootec., Parma,* **3,** 199-218. [English, French and German summaries. Abst. from English summary.] 3542

A report of observations on the basal body temperature during the oestrous cycle and during oestrus in 45 cows.

There was a biphasic temperature curve during the oestrous cycle: a low phase (10–13 days) corresponding with anoestrus and pro-oestrus; and a high one (8 days in average) relative to metoestrus. During oestrus the temperature rises 0·3–0·7°C. the first day; the next day, it falls 0·3–0·5°C. below the average of the pro-oestrous phase. This fall is ascribed to ovulation. During the first 20 days of pregnancy the temperature remains monophasic and stays at the high level of normal metoestrus. This may indicate an early sign of pregnancy in a cow.

Werthemann, A., Reiniger, M. & Thoclen, H. (1950). Untersuchungen über den Einfluss des Sauerstoffmangels auf die fötale Entwicklung von Säugetieren. [**Influence of oxygen deficiency on foetal development of mammals.**]—*Schweiz. Z. allg. Path.* **13,** 756-779. [English, French and Italian summaries. English summary modified.] 3543

In preliminary experiments on pregnant rabbits, the uterine artery was constricted in an attempt at producing unilateral reduction of the blood supply. Significantly more of the embryos underwent resorption on the injured than on the normal side of the uterus. Various malformations of the brain were also observed. The main experiment consisted of subjecting pregnant rats to an atmospheric pressure of 460 mm. and 360 mm. Hg. This distinctly reduced the average number of offspring, down to 50% when pressure was very low. The number of stillborn offspring was considerably lower than normal. Length and weight of the surviving offspring were somewhat above average, and the duration of pregnancy was longer. Eye malformations were observed.

Hansel, W. & Asdell, S. A. (1952). **The causes of bovine metestrous bleeding.**—*J. Anim. Sci.* **11,** 346-354. [Authors' summary copied *verbatim.*] 3544

Overt uterine bleeding follows if ovariectomy is performed during or one day after heat; not if the operation is performed at any other stage in the cycle. Injections into ovariectomized cows of a variety of hormones, given in various combinations and dosages rarely cause overt bleeding. The evidence favors the view that normal metestrous bleeding in the cow is due to estrogen withdrawal, although the cessation of estrogen injections does not cause overt bleeding in ovariectomized cows. Microscopic bleeding in the ovariectomized cow occurs sometimes during estrogen injections. Then there is a latent period of about ten days after which they may bleed again. With progesterone injections all cows showed microscopic bleeding. Microscopic bleeding in the normal cow is probably due to progesterone and its occurrence at about ten days post-estrum is probably due to the action of the latent period. Prostigmine injections into normal cows are not followed by bleeding.

Swingle, W. W., Seay, P., Perlmutt, J., Collins, E. J., Barlow, G. Jr. & Fedor, E. J. (1951). **An experimental study of pseudopregnancy in rat.**—*Amer. J. Physiol.* **167,** 586-592. [Authors' summary copied *verbatim.*] 3545

Five hundred virgin female rats were used in a study of the factors inducing pseudopregnancy. A wide variety of agents when injected subcutaneously, were found capable of inducing the pseudopregnant condition, e.g., fresh tissue homogenates of spleen, liver, lung, thymus, hypothalamus, brain cortex etc., also, adrenaline, nor-adrenaline, formaldehyde, Metrazol, alloxan and insulin. None of these agents were active in ovariectomized rats but were effective when tested on adrenal demedullated animals. Traumatizing the uterus by insertion of threads induced formation of large, well-formed deciduomata. Pseudopregnancy in the rat requires that the anterior pituitary release sufficient luteotropin to activate the corpora lutea to secrete progestrone. Apparently any vigorous, nonspecific stress procedure will bring about luteotropin release in this species.

Bennetts, H. W. & Underwood, E. J. (1951). **The oestrogenic effects of subterranean clover** (*Trifolium subterraneum*).—*Proc. Spec. Conf. Agric., Aust.* 1949. pp. 329-334. London : H.M. Stat. Off. 20s. 3546

This is a review of research completed and in progress on a breeding problem in sheep pastured on subterranean clover. Available evidence indicated that the disease was caused by an oestrogen in the clover. The manifestations were female infertility, uterine inertia and prolapse, and cystic hyperplasia of the endo-

metrium. The infertility and endometrial lesions were found to be still present several years after transfer to non-clover grazing. Control measures in use were designed to prevent the sheep regularly ingesting excessive amounts of green clover.—A. W. H. Braden.

Robson, J. M. & Sharaf, A. A. (1952). **Effects of some water soluble steroids on the uterus.**—*J. Endocrinol.* **8,** 133-137. [Authors' summary copied *verbatim.*] 3547

The effects of disodium oestradiol disulphate, sodium oestrone sulphate, testosterone sulphate and strophanthin on the mouse, rabbit, rat and human uterus *in vitro* have been investigated. All the sex hormone derivatives produced qualitatively similar effects which appear to depend on the hormonal environment of the uterus. Strophanthin consistently produced a motor effect.

Flynn, D. M. (1952). **Bovine sterility, control and treatment.**—*Aust. vet.* **28,** 10-17. 3548

F. discussed bovine sterility as a herd problem in Victoria. He drew attention to the paucity of reliable data on its incidence and outlined the methods adopted to define its nature and occurrence.

Infertility in herds falls into one of three classes: (1) chronic year in and year out, (2) variable from year to year, (3) acute, which may resolve itself in one season or pass into category (1). The author cites herds fitting into these different categories.

Infertility of the bull is a very minor cause of herd trouble. Infectious diseases, such as brucellosis and trichomoniasis, appear to play only a small part. Other infectious conditions such as vibrionic abortion, those caused by pleuro-pneumonia-like organisms, non-specific sterility and epididymitis and vaginitis are of doubtful importance. *Vibrio fetus* has not yet been found in Victoria.

The author believes that poor herd management is an important cause of sterility, particularly excessive use of the bull at the end of a short season and too early mating of recently calved cows.

Nutritional effects are believed to be only of minor importance, but F. suggested that the concentration of breeders on developing high producing animals may be leading to impaired reproductive efficiency.—L. H. Larsen.

Watts, R. M. (1952). **Control and treatment of bovine sterility.**—*Aust. vet. J.* **28,** 18-25. 3549

The author believes that the major single cause of sterility in New South Wales is metritis, and that infertility of the bull is not a main factor.

Brucellosis is a definite contributory cause and the subsequent metritis is difficult to treat successfully. Trichomoniasis occurs over a wide area; the control policy is to slaughter all bulls exposed to infection and to give all females sexual rest for at least three months. Only one case of vibrionic abortion has been diagnosed. Non-specific sterility, particularly metritis, is blamed for most losses. Various treatments have been tried but 1% Lugol's iodine is most popular, although cows with subacute metritis respond better to propamidine. Vaginitis as a cause of infertility plays only a minor role. Mineral deficiencies, particularly aphosphorosis, or a very wide Ca : P ratio, as in heavily limed areas, are suspected as a factor in certain coastal districts. Ovarian irregularities such as quiescence, retention of corpora lutea and cysts are common and W. considers them next in importance to metritis as causes of bovine sterility.—L. H. Larsen.

Koch, P. & Fischer, H. (1951). Die Oldenburger Fohlenataxie als Erbkrankheit. **[Hereditary ataxia in foals in Oldenburg.]**—*Tierärztl. Umsch.* **6,** 158-159. 3550

In reporting on two further cases of this condition [see also *V.B.* **22,** 2293] the authors reviewed the present state of knowledge, referred to differential diagnosis and made suggestions for methods of investigation in the future.—C. W. Ottaway.

Monti, F. (1951). Le cardiopatie congenite in patologia comparata. **[Comparative pathology of congenital diseases of the heart.]**—*Nuova Vet.* **27,** 33-43, 65-79, 107-111 & 146-150. 3551

M. reivewed the literature on congenital heart disease in domestic animals and described four cases in dogs. One was a fatal case with dyspnoea and tachycardia, but without cyanosis; there was X-ray evidence of considerable cardiac enlargement. One had a persistent ductus arteriosus, with dyspnoea and cough, tachycardia, hypertrophic shadow and double systolic-diastolic murmur. The other two were diagnosed as cases of interventricular communication, on the basis of clinical and radiological signs, but there was no P.M. examination.—E. Vazquez-Lopez.

Saunders, L. Z. (1952). **Congenital optic nerve hypoplasia in collie dogs.**—*Cornell Vet.* **42,** 67-80. [Author's summary copied *verbatim.*] 3552

Blindness is occasionally observed by

breeders in blue merle collie dogs. Five blind pups from a merle blue litter are described in which a congenital anomaly of the retina and optic nerves formed the anatomic basis for the defective vision. The anomaly was a hypoplasia, upon which an ante-natal degeneration was superimposed in some of the animals. Some possible etiologic factors are discussed, but the etiology of the condition was not determined. The literature on comparable diseases of the retina and optic nerves in animals is briefly reviewed.

See also abst. **3577** (book, antibodies and embryos).

ZOOTECHNY

GAZTAMBIDE ARRILLAGA, C., HENNING, W. L. & MILLER, R. C. (1952). **The effects of environmental temperature and relative humidity on the acclimation of cattle to the tropics.**—*J. anim. Sci.* **11**, 50-60. [Authors' summary modifled.] **3553**

The Jersey breed is readily adaptable to Puerto Rican climate and environment. The Brown Swiss, Guernsey and Ayrshire breeds seem to follow the Jersey in adaptability in this order, as shown by their body reactions and milk production. The Holstein breed from the physiological viewpoint seems to be less adaptable than the other breeds to Puerto Rican climate and environment. Native grades, Brahman grades and Hereford cows seem to acclimatize well to Puerto Rican conditions but seem to be more sensitive to a high humidity than the dairy breeds studied.

There seems to be nothing in the Puerto Rican environment to prevent the further development of the cattle breeds, if suitable methods of feeding, management and protection against disease and parasites are employed. The selection of cattle with high tolerance to thermal stress is of primary importance as the basis for the full development of the cattle industry in the tropics. Environmental temperature appears to be the most significant factor affecting the physiological well being of the cattle breeds, relative humidity being of secondary importance.

HIRSCH, M., GRAHAM, E. F. & DRACY, A. E. (1952). **A classification for the identification of bovine noseprints.**—*J. Dairy Sci.* **35**, 314-319. [Authors' summary copied *verbatim.*] **3554**

A method of classifying bovine noseprints by patterns has been described. According to this classification, it is possible to segregate the noseprints of any breed into 5,832 different groups, each of which covers only a few prints; this simplifies absolute identification. Even if several specimens have the same general classification enough minute individual differences are present for an accurate decision.

CROFT, P. G. (1952). **Problems of electrical stunning.**—*Vet. Rec.* **64**, 255-258. [Author's summary copied *verbatim.*] **3555**

A new method of assessing pain perception in animals is described, which is valid in states of "curarisation". The unusual condition of animals after electroplexy is discussed, and the effect of electrical and biological variables on this procedure is summarised.

LE ROUX, J. D. (1952). **The value of camps on a cattle ranch.**—*Fmg. S. Afr.* **27**, 41-44 & 72. **3556**

In tests with cattle using a treadmill to ascertain the effect of walking on the animal's economy, it was found that in cattle obliged to walk seven miles a day maintenance requirements were 70% higher, so that only ten cattle could be kept instead of 17. This fact is of major importance in cattle ranching, particularly for camp division with a view to the economic utilization of available grazing.

By properly dividing a farm and reducing as much as possible the distance to be walked daily by suitably controlled grazings, it is possible to increase the carrying power of the farm. It is shown that a farm purchased to carry 200 cattle was able to carry 133 extra cattle after division into camps and judicious control of the available grazing. The value of land is calculated at £30 per unit of its carrying capacity, so that in this case the value of the farm increased by £30 × 133, or by £3,990.

—D. S. RABAGLIATI.

VASILETS, Y. E. & GOLUSHKO, V. G. (1951). **[Rearing of calves and lambs under cold conditions.]**—*Veterinariya, Moscow.* **28**, No. 1. pp. 32-34. **3557**

Details were given of the rearing of young stock in winter on a farm in Russia, first in buildings where temperatures may fall to −8°C., and from six months old in the open where temperatures may fall to about −30°C., and with only an open shed for shelter. In a herd of 7,000 cows the incidence of respiratory diseases was thereby reduced by about 75%.

—F.A.A.

Letard, E., Szumowski, P. & Théret, M. (1952). Application des oestrogènes de synthèse dans l'accélération de la croissance et de l'engraissement du porc. [**Use of synthetic oestrogens in fattening of pigs.**]—*Rec. Méd. vét.* **128,** 65-78. 3558

Single large injections of synthetic oestrogen (dienoestrol diacetate) were found to accelerate the fattening of pigs. This was more marked in sows than in castrated males. The tissues, especially the fat, contained considerable amounts of active oestrogenic substances.

—Charlotte M. Wood.

Coates, M. E., Dickinson, C. D., Harrison, G. F., Kon, S. K., Porter, J. W. G., Cummins, S. H. & Cuthbertson, W. F. J. (1952). **A mode of action of antibiotics in chick nutrition.**—*J. Sci. Food Agric.* **3,** 43-48. [Authors' summary copied *verbatim.*] 3559

Procaine penicillin [penicillin (procaine salt)] added to a good practical ration improved the growth of chicks in a laboratory used for poultry for ten years. Chicks from the same batch in two other laboratories, where birds had not been kept before, grew equally well on the ration with and without penicillin, and growth was the same as that on the penicillin-supplemented diet in the usual chick laboratory.

The growth depression in the absence of dietary penicillin was not due to differences in management or to recognizable disease. It is suggested that it is due to an 'infection' hitherto undescribed and shown to be transmissible and counteracted by penicillin.

Whittlestone, W. G. & Batt, W. G. (1952). **An improved air admission method for use on milking machine claw pieces.**—*N. Z. J. Agric.* **84,** 48. [Authors' summary copied *verbatim.*] 3560

It has been evident for some time that the milk tube of the claw piece of certain milking machines does not clean satisfactorily. This article describes a simple modification of the claw cap air admission method which obviates this difficulty. The new claw cap was developed at the Department of Agriculture Animal Research Station, Ruakura, and has been shown after a year's trial in the field to be superior to other attempts to solve the problem.

TECHNIQUE AND APPARATUS

Vinet, G. & Fredette, V. (1951). **Apparatus for the culture of bacteria in cellophane tubes.**—*Science.* **114,** 549-550. 3561

A 4 ft. length of 64 mm. diameter Pyrex tubing is fitted at both ends with flared openings for No. 9 rubber stoppers. Two side outlets for $\frac{1}{4}$ in. rubber tubing are provided at the two ends of the glass tube. Into the glass tube is fitted a 42 mm. diameter Visking cellophane tubing with the ends intussuscepted over the flared openings of the glass tube, which is then fitted with one-holed rubber stoppers. The bottom one receives a Y-tube for supplying the inner tube with saline. The top one is fitted with an air filter (funnel type). One end of the Y-tube is connected to a 2-litre saline bottle, while the other end has a device for aseptic sampling. One branch of a T-tube on the lower side of the outside tube is connected to a 12-litre bottle containing the fresh culture medium. The other outlet is connected with a bottle for collecting the exhausted medium. The upper side outlet of the outside glass tube has an air filter. The apparatus, sterilized in an autoclave for one hour at 120°C., is hung from the ceiling in an incubator room. Seed culture is introduced into the cellophane tube and the culture medium is introduced outside the cellophane. Bacterial growth begins in the saline-dialysate mixture in 24–48 hours; the outside medium remains free from those metabolic products which cannot dialyse. Periodic replacement with fresh broth of the medium outside the cellophane tube furnishes the bacterial culture with nutriment and removes metabolic products which might restrain growth.—W. R. Bett.

Middlebrook, G. (1952). **An apparatus for airborne infection of mice.**—*Proc. Soc. exp. Biol., N.Y.* **80,** 105-110. [Author's summary copied *verbatim.*] 3562

A safe and relatively inexpensive laboratory apparatus for the experimental airborne infection of as many as 100 mice at a time has been described. It has been used for the production of murine pulmonary tuberculosis with tubercle bacilli cultivated in Tween-albumin liquid medium.

Hillier, J. & Gettner, M. E. (1950). **Sectioning of tissue for electron microscopy.**—*Science,* **112,** 520-523. 3563

Details of techniques for the cutting and mounting of sections for electron microscopy. Variables involved in the selection, fixation and

embedding of the tissue are eliminated by using a single set of blocks originating from one piece of tissue.—G. DAVIES.

NICHOLAS, J. W. (1951). **The precise determination of haemoglobin in blood by abridged photoelectric spectrophotometry.**—*Biochem. J.* **50,** 1-5. [Author's summary copied *verbatim.*] **3564**

A precise photoelectric method is described for the determination of haemoglobin in blood, suitable for routine, research or standardization purposes, and depending on the measurement of its extinction as oxyhaemoglobin at the 0·546 mμ. line of the mercury arc. The latter can be isolated by a special filter combination.

On the British Standard haemoglobin scale 100% corresponds to an extinction in a 1 in 100 dilution of 1·193. By calculation from this value the specific extinction $E^{1\ g./ml.}_{546\ m\mu.}$ is 806, and the molecular extinction $\epsilon_{546\ m\mu.}$ is 53,910.

JARRETT, W. F. H. (1952). **A technique for bovine blood transfusion.**—*Vet. Rec.* [illegible]. [Author's summary slightly modified.] **3565**

A simple method was described for withdrawal of blood from the bull. The main feature is the ease and speed with which blood can be collected from fractious animals. This is accomplished by the use of large needles, pretreated with silicone, and by using partially evacuated transfusion bottles. A simple method was described for inoculating calves with the blood of their dam.

See also absts. **3251** (frog test for staphylococcal enterotoxin); **3260** and **3332** (Sabin-Feldman test); **3263** (cultivation of avian type *M. tuberculosis*); **3281** (media for isolation of *Salmonella* organisms from faeces); **3304**; (hanging-drop technique in differentiation of *M. audouini* and *M. canis*); **3307** (freeze-drying of bovine contagious pleuro-pneumonia organisms); **3330** (complement-fixation test for toxoplasmosis); **3345** (cultivation of F. & M. disease virus on chick embryos); **3405** (electron microscopy of lysis of *B. cereus*); **3418** (cultivation of *R. burneti*); **3421** (passaging *Rickettsia* organisms in meal worms); **3501** (assessment of toxicity of chemical compounds).

MISCELLANEOUS

LOUTIT, J. F. (1951). **The effect of atomic weapons on domestic animals.**—*Vet. Rec.* **63,** 773-775. **3566**

Appalling blast and intense heat radiation apart, the enormous efflux of radio-activity alone is instantly lethal to the unprotected animal within there quarters of a mile of the exploding bomb. L. discussed in some detail the effects of radiation on animals surviving the immediate explosion.—L. M. MARKSON.

REPORTS

CANADA, PROVINCE OF PRINCE EDWARD ISLAND. (1951). **Annual report of the Department of Agriculture for the year ending March 31st 1951.** [BAKER, C. C.] pp. 93. Summerside, P.E.I.: Journal Publishing Co. Ltd. [Report of the Director of Veterinary Services pp. 41-59.] **3567**

Practising Veterinary Surgeons are now subsidized by the Province and the scheme is working satisfactorily. The control of BRUCELLOSIS is being attempted.—G. B. S. HEATH.

GREAT BRITAIN. (1951). **Annual report and statement of accounts of the Colonial Development Corporation for year ended 31st December 1951.** pp. 74. London: H. M. Stat. Off. 3s. **3568**

The report contains particulars about schemes in varying stages of development for stock-farming in British Honduras, Bechuanaland and Gambia, and fishing and sealing in the Seychelles and Falkland Isles. Abandoned undertakings include stock-raising for slaughter in North Borneo and British Somaliland, fisheries in Nyasaland and on the West African coast and the Gambia poultry farm, the failure of which is attributed to NEWCASTLE DISEASE.

—WINIFREDE TATHAM THOMPSON.

UNION OF SOUTH AFRICA. (1951). [Divisional reports] **Safeguarding the Union's livestock industry.** [ALEXANDER, R. A.]—*Fmg. S. Afr.* **26,** 432-448. **3569**

The report by the Director of Veterinary Services is concerned partly with general protective measures, and partly with research into the treatment of a great variety of bacterial and virus infections and helminth infestations affecting cattle, sheep, pigs and poultry. Obscure cases of poisoning have been investigated by measuring the quantities of toxic substances in plants likely to be ingested by farm animals. In an epidemic of F. & M. DISEASE in the Transvaal, live-virus inoculation was used without untoward effects.

—WINIFREDE TATHAM THOMPSON.

UNION OF SOUTH AFRICA, JOHANNESBURG. (1951). **Report of the Director, Abattoir and Live Stock Market Department for the period 1st**

July 1950 to 30th June 1951. [ROBINSON, M. C.] pp. 20. Johannesburg: Radford Adlington Ltd. 3570

Statistics of the number of animals slaughtered are given, showing a decline as compared with the previous year. The report covers a discussion on the Government's general policy regarding abattoirs and cold storage depots.

Serious outbreaks of F. & M. DISEASE occurred in the Eastern Transvaal and on several farms adjoining the Kruger National Park. Strict police measures were taken. RIFT VALLEY FEVER, which also affects human beings, was discovered for the first time in the Union.

Preventative inoculations were carried out against ANTHRAX, BLACKLEG, CONTAGIOUS ABORTION, AFRICAN HORSE SICKNESS and NEWCASTLE DISEASE.

Inspection of dairy herds was continued. Biological tests of herd samples for TB. totalled 1,430 and 0·8% were positive, as compared with 59 samples tested in 1947 of which 3·4% were positive. The usual heavy infestation of SARCOPTIC MANGE was found.

—D. S. RABAGLIATI.

SOUTHERN RHODESIA. (1952). **Report of the Director of Veterinary Services for the year ending 30th September 1951.** [ADAMSON, G.] pp. 23. The Govt. Printer 3571

Widespread outbreaks of RABIES occurred: avianized vaccine was successfully used as protection: 16,234 stray dogs were destroyed. 58,441 inoculations were given against F. & M. DISEASE. The incidence of TB. in dairy herds was 3·6%. 160 farms were quarantined for CONTAGIOUS EPIDIDYMITIS and VAGINITIS; CONTAGIOUS ABORTION was rife. The poultry industry is expanding but there is little disease: 53,323 fowls were tested for BACILLARY WHITE DIARRHOEA and six infected flocks were found. There is a shortage of professional officers and inspectors.—S. E. FOX.

EAST AFRICA HIGH COMMISSION. (1952). **East African Tsetse and Trypanosomiasis Research and Reclamation Organization. Annual report 1951.** [LESTER, H. M. O.] pp. 56. Nairobi: East Africa High Commission. 3572

The report deals with the habitat and natural history of the tsetse fly, with methods of catching adult flies and larvae, and with finding and clearing the breeding-places by studying the vegetation and animal burrows chiefly used. Insecticides employed by spraying to kill adult flies included benzene hexachloride and Rucide. Experimental use of antrycide for prophylaxis and treatment of cattle has been continued. It was found most useful for prophylaxis or for treatment in the early acute stage. There has been evidence of resistance by some strains of *Trypanosoma* and *Glossina*. An attempt has been made to eliminate reservoirs of infection by the systematic killing of large game in certain areas.

—WINIFREDE TATHAM THOMPSON.

JAMAICA. (1949). **Annual Report of the Department of Agriculture for the year ended 31st March, 1947.** pp. 30. Items of veterinary interest pp. 22-26. Kingston: Govt. Printer. 3573

None of seven suspected cases of ANTHRAX were confirmed. Vaccination of 1,298 cattle with ANTHRAX spore vaccine was carried out by the Veterinary Staff.

Clostridum chauvoei was identified as the cause of deaths in ten outbreaks of BLACKLEG. The disease occurs throughout the island.

In a pilot survey of TB. 4,232 cattle were tested with tuberculin and 1·16% were positive and 0·3% suspicious. TB. eradication measures are difficult, mainly because of shortage of veterinary surgeons. 2,148 calves were vaccinated with *Br. abortus* Strain 19 vaccine and 2,717 blood tests were made. MASTITIS is recognized as the limiting factor in the development of the dairy industry. The Veterinary Division is endeavouring to control the disease by improving dairy hygiene and animal husbandry and as many cases of the disease as possible are being investigated and treated. There is already a noticeable improvement in dairy management. TETANUS occurs sporadically among horses and mules. About 27% of treated cases recover. Permanent immunization is recommended to all owners of horses and mules.

SWINE FEVER control is difficult because many of the pigs owned by small settlers are in inaccessible places. Positive cases were diagnosed in two areas in Kingston and 329 pigs were vaccinated with crystal violet vaccine.

Tick control by dipping in arsenical dip fluids is satisfactory when the maintenance of arsenical content is efficient. Tests of benzene hexachloride preparations were being made. In one experiment a herd was kept tick free by the use of a powder (agrocide) containing crude benzene hexachloride used regularly every three or four days. There was no drop in milk yield such as occurs in dairy herds after dipping.

Investigations by field and laboratory staff were being concentrated on HELMINTH INFESTA-

TION IN CALVES. LUNGWORM DISEASE (*Dictyocaulus viviparus*) is very common and causes much damage to affected animals. *Haemonchus contortus* is controlled among calves and young cattle by the regular use of phenothiazine. *Fasciola hepatica* is very common in swampy areas and infects most of the cattle grazed thereon.

Details are given of the year's work on artificial insemination. The conception rate to first service was 58% and to second service 77·1%.

The Veterinary Research Laboratory has not yet been completed but a diagnostic service has been functioning during 11 months of the year.—J. A. GRIFFITHS.

BRITISH HONDURAS. (1949). **Report of the Department of Agriculture for the year ended 31st December 1949.** pp. 11. 3574

Livestock losses were severe owing to failure of pastures resulting from one of the most severe droughts ever experienced in the Colony. It was estimated that 3,500 cattle died.

Pigs were on the increase but good sires were lacking.

The majority of contagious diseases reported were amongst poultry; these were 317 cases of FOWL CHOLERA, 619 of FOWL TYPHOID and 372 of FOWL POX.—D. S. RABAGLIATI.

BRITISH HONDURAS. (1950). **Report of the Department of Agriculture for the year ended 31st December, 1950.** pp. 16. 3575

Conditions were easier for livestock than in 1949 as the drought had broken in December 1949.

Nothing unusual was reported regarding contagious disease. The Colony was visited by the Veterinary Investigation Officer from Jamaica, who made certain recommendations, such as the use of the Red Poll/zebu for beef under general conditions, and the Aberdeen-Angus/zebu for higher areas where better and more constant food is available; and the continuation of the survey on animal diseases and the improvement of the existing legislation dealing with animal importation and disease control.—D. S. RABAGLIATI.

INDONESIA. (1951). Jaarverslag van het Veeartsenijkundig Instituut te Bogor over het jaar 1949. **[Report of the Veterinary Institute of Bogor for the year 1949.]** [DE BOER, E.] —*Hemera Zoa*. **58**, 699-728. 3576

In the material received for diagnostic examination HAEMORRHAGIC SEPTICAEMIA was diagnosed four times in specimens from 4 cattle and 30 buffaloes; ANTHRAX was diagnosed in specimens from 8 cattle, 91 buffaloes, 9 horses, 10 goats, 2 sheep and 62 human beings. Of 703 complement-fixation tests on sera from horses for GLANDERS, 81 were positive; all the sera were negative for melioidosis antibodes. One case of "BUFFALO LEPROSY" was seen.

Choanotaenia infundibulum was found in a bird of paradise, *Raillietina cesticillus* and *R. echinobothrida* in fowls and *Oesophagostomum columbianum* in a goat.

Vaccines were made against HAEMORRHAGIC SEPTICAEMIA, ANTHRAX, BLACKLEG, BRUCELLOSIS (Strain 19), FOWL POX and NEWCASTLE DISEASE.—C. A. VAN DORSSEN.

BOOK REVIEWS

BRAMBELL, F. W. R., HEMMINGS, W. A. & HENDERSON, M. (1951). **Antibodies and embryos.** pp. 103. London: University of London, The Athlone Press. 12s. 6d. 3577

Accurate knowledge of the precise method of transference of serum proteins from mother to young in mammals is of great practical importance to the veterinary clinician and research worker. Not only can the phenomenon be made to play a part in the control of disease but it may also be a factor in the production of pre-natal mortality and haemolytic disease of the new-born. In immunological studies with young experimental animals it is also of prime importance to appreciate that variations in response in the 'normal' animal might be influenced by the state of immunity of its mother.

The intention of this book is "to give a coherent account of our researches on foetal rabbits . . . rather than to provide an exhaustive review of the literature on the transmission of passive immunity from mother to young in mammals". Despite the latter contention, however, the bibliography contains the titles of over a hundred papers which have been quoted and these would be invaluable for those seeking further information.

These researches originated from an observation made when carcasses of wild rabbits were being examined in a survey of the incidence and distribution of pre-natal mortality. It was noted that a large proportion of the total pre-natal mortality occurred about the 11th day of gestation and affected all the embryos of a litter simultaneously. The embryos were resorbed and not aborted. It re-

flects great credit on the original observers that the practical significance of this finding was appreciated and that the special skills of a large team of collaborators were sought to resolve the varied problems which arose during the studies on domesticated rabbits which followed. These demonstrated that maternal serum proteins—antibodies were used as markers—pass freely through the bilaminar omphalopleur into the contents of the yolk-sac at an early stage of pregnancy. At a later stage they are absorbed by the yolk-sac splanchnopleur from secretions in the uterine lumen. The accepted view that the allanto-chorionic placenta was the organ of transference of passive immunity from doe to foetus was thus shown to be incorrect.

The text is based upon a series of three lectures delivered before the University of London and is illustrated with diagrams. Immunologists, physiologists, embryologists and those studying infertility and diseases of the new-born will have watched with interest the development of this work over a period of ten years and there is little doubt that some will have been stimulated by it to apply the novel techniques to other species in order to test the validity of current theories.

There is an index of authors and a meticulously prepared index of subjects (totalling nearly three hundred) which greatly facilitates reference to the excellent summaries in the text of current knowledge applicable to the domesticated ungulates and carnivores, and to rodents and man.—H. H. Skinner.

Anon. (1951). **Manual of tumor nomenclature and coding.** pp. 119. New York: Statistical Research Section, American Cancer Society. $2.50. 3578

This book represents essentially an attempt by pathologists and statisticians to provide a means of classifying neoplasms as they occur in the human body, so that they may be assigned code numbers which will permit mechanical sorting of pathological data for statistical studies and also facilitate exchange of information. The code numbers comprise three digits. The first two of these indicate the histogenesis (*e.g.*, tumours of nervous tissue and associated structures are assigned numbers 40 to 49), and the third the malignancy (*e.g.* ·2 indicates a benign neoplasm thought to have pre-malignant significance). The names of the various tumours have been drawn up into two lists; in the first, the numerical list, they are grouped according to their histogenesis and malignancy under the consecutive code numbers, while in the second list they appear alphabetically along with their corresponding code number. Names that are thought to be obsolete or vague or are otherwise not recommended for use are indicated by an asterisk.

The code is expected to be used as a supplement to an anatomical site code such as that in the International Statistical Classification of Diseases, Injuries and Causes of Death (World Health Organisation), or the Standard Nomenclature of Diseases (American Medical Association).—E. Cotchin.

Koch, W. & Deimel, B. (1952). Über Krankheiten der Menschenaffen. **[Diseases of apes.]** pp. 68. Jena: Gustav Fischer. DM.6. 3579

Two thirds of this little book consist of detailed accounts of P.M. examination performed on four gibbons, three orang-outangs, two gorillas and four chimpanzees from the Berlin Zoological Gardens, over a period of several years. In the remaining chapters literature on diseases of anthropoid apes is reviewed and the incidence and characteristic features of these diseases are discussed. There is an appendix on the anatomy of the laryngeal air sac and a brief note on measurements and age of some apes in captivity. There are 19 illustrations and a list of references.—E.G.

Suter, C. M. [Edited by.] (1951). **Medicinal chemistry. Vol. I. A series of reviews prepared under the auspices of the Division of Medicinal Chemistry of the American Chemical Society.** pp. vii+473. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. 80s. 3580

This publication is the first volume of a series planned to give comprehensive and systematic summaries of the available data on all compounds that have been tested for a particular pharmacological or biological activity. Each section is written by a worker actively engaged in research in that particular field. In addition to data on individual substances, each subject is introduced with historical notes, sections on the basic pharmacological mechanism, general mode of action, methods of measuring the particular activity and an attempt to correlate chemical structure with pharmacological activity. This volume covers antithyroid compounds; antispasmodic derivatives of carboxylic acid; antibiotics from plants, benzoates and substituted benzoates as local anaesthetics, and analgesics.

These volumes will be, essentially, reference books for chemists and pharmacologists concerned with the synthesis and testing of new compounds. In this first volume, of the

466 pages excluding the index, no less than 276 pages are devoted to lists of chemical compounds that have been tested for particular activity and more than 800 references are cited.

—W. M. HENDERSON.

FLEISCHMANN, W. (1951). **Comparative physiology of the thyroid and parathyroid glands.** pp. 78. Springfield, Ill.: Charles C. Thomas; Oxford: Blackwell Scientific Publications, Ltd. 16s. 6d. 3581

This useful little summary brings together much information from papers in a wide selection of journals, mainly American. Continental journals seem to have been searched fairly thoroughly, yielding in particular many references to the older German literature, but very few papers published in Great Britain are mentioned; for example, only one paper—a relatively trivial one—is listed from the *Journal of Endocrinology* and none at all from the *Biochemical Journal*.

The presentation reflects the outlook and interests of a medical pathologist. He has, for example, not discovered that milk fever is not a febrile condition; certain other statements are open to question. However, the writing and printing are good.

After showing that tunicates and acraniates have no tissue analogous to the thyroid of higher chordates, the author discusses the literature on fishes, amphibia, reptiles, birds and mammals. It is evident from the summaries either that the effects of the thyroid hormone are very different in the different groups of animals or that the same hormone is not produced in the individuals of each group. This point might well have been discussed.

The final chapter, described as "Conclusion" is not integrative; the author describes it as a recapitulation of "some findings which seem of general interest to the biologist".

—F. B. LEECH.

SCOTT, J. C. [Formerly Professor of Soil Science, Cheeloo University, North China.] (1952). **Health and agriculture in China. A fundamental approach to some of the problems of world hunger.** pp. 279. London: Faber & Faber Ltd. 25s. 3582

The author analyses and describes the dual problems of agricultural sanitation—faeces-borne disease and loss of soil fertility—of North China, as found by research work carried out at the universities of Cheeloo and Yenching before the second world war. He describes experiments done in attempts to solve these problems and outlines fresh problems uncovered in the course of investigation. He then shows how the concrete findings could be adapted by rural and urban communities in North China for the improvement of the health of the people and the enrichment of the soil. Finally he suggests that techniques evolved during this research might be applied to the wider problems of world hunger.

Despite the wealth of scientific data accumulated and offered the book is written in an unusually simple and fluent style which makes it enjoyable as well as instructive. It should form a valuable addition to the libraries of agriculturalists and Public Health workers interested in particular in Chinese agriculture and health or in the wider problems of world hunger.—CHARLOTTE M. WOOD.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BLOCK, R. J., LESTRANGE, R. & ZWEIG, G. (1952). **Paper chromatography. A laboratory manual.** pp. x + 195. New York: Academic Press Inc. $4.50.

BLOUNT, W. P. (1951). **Hen batteries.** pp. viii + 259. London: Baillière, Tindall & Cox. 15s.

VON BRAND, T. (1952). **Chemical physiology of endoparasitic animals.** pp. x + 339. New York: Academic Press Inc. $7.50.

DERBES, V. J. & WEISS, T. E. (1951). **Untoward reactions of cortisone and ACTH.** pp. vii + 51. Oxford: Blackwell Scientific Publications. 8s. 6d.

ANON. (1952). **Antibiotics: A survey of their properties and uses.** pp. xii + 290. London: The Pharmaceutical Press. 2nd Edit. 25s. [1st Edit. "Penicillin: Its properties, uses and preparations" (1946).]

ANON, (1952). **The Merck index of chemicals and drugs. An encyclopedia for the chemist, pharmacist, physician and allied professions.** pp. xiv + 1167. Rahway, N.J.: Merck & Co., Inc. 6th Edit. $7.50.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey

INDEX VETERINARIUS

The publication of *Index Veterinarius* commenced with the indexing of the literature of 1933. It is a complete index of current publications relating to veterinary research, public health, administration, education and other aspects of veterinary science.

The latest list of the publications searched for this purpose was circulated with the *Veterinary Bulletin*, **Vol. 22**, No. 1.

About 10,000 references are indexed each year, each reference being suitably cross-indexed alphabetically under subjects and under names of authors.

As each issue consists of a single complete alphabetical index of subjects and authors' names, a search through it involves a minimum of trouble, and all information required is readily found.

Vols. 1 to 5 (1933 to 1937) were issued quarterly, each volume covering the literature searched in the previous quarter, and Vols. 6 to 12 (1938 to 1944) half-yearly, each volume covering the literature searched in the previous six months. Vol. 13 (published 1946) was a single annual issue covering the literature searched in 1945 ; Vol. 14 is a single issue covering the literature searched in 1946. Vol. 15 will also be a single issue.

Stocks of Vols. 4, 5 and 13 are available : price £5 per volume. Other volumes incomplete : details on request.

Orders may be sent to: Central Sales Branch (Commonwealth Agricultural Bureaux), Farnham House, Farnham Royal, Nr. Slough, Bucks.

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A new number of the Review Series of the Commonwealth Bureau of Animal Health has recently been published. It deals with photosensitization in diseases of domestic animals and has been prepared by N. T. Clare, M.Sc., of the Ruakura Animal Research Station, New Zealand.

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by

N. T. CLARE, M.Sc.

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